TELEPHONE ENGINEER

THE INTERNATIONAL TECHNICAL JOURNAL

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Communications Commission
Seated, left to right: Thad H. Brown, E. O. Sykes, chairman; Paul A. Walker. Standing: irvin Stewart, G. H. Payne, N. S. Case, Hampson Garry.
ARTICLE ON PAGE 19

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POWER NOISE REDUCTION IN TELEPHONE CIRCUITS
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Page 16

AUGUST, 1934

Not two old units joined – but a Completely new Handset!

WHILE the new Stromberg-Carlson 1191 Handset is completely self-contained . . . with ringer, induction coil and condenser mounted in the base . . . it does not represent a handset and desk set box joined together. *This new instrument is no larger than the conventional handset!*

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30-DAY LIFE FOR READERS AND ADVERTISERS

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What They Say About Your Business

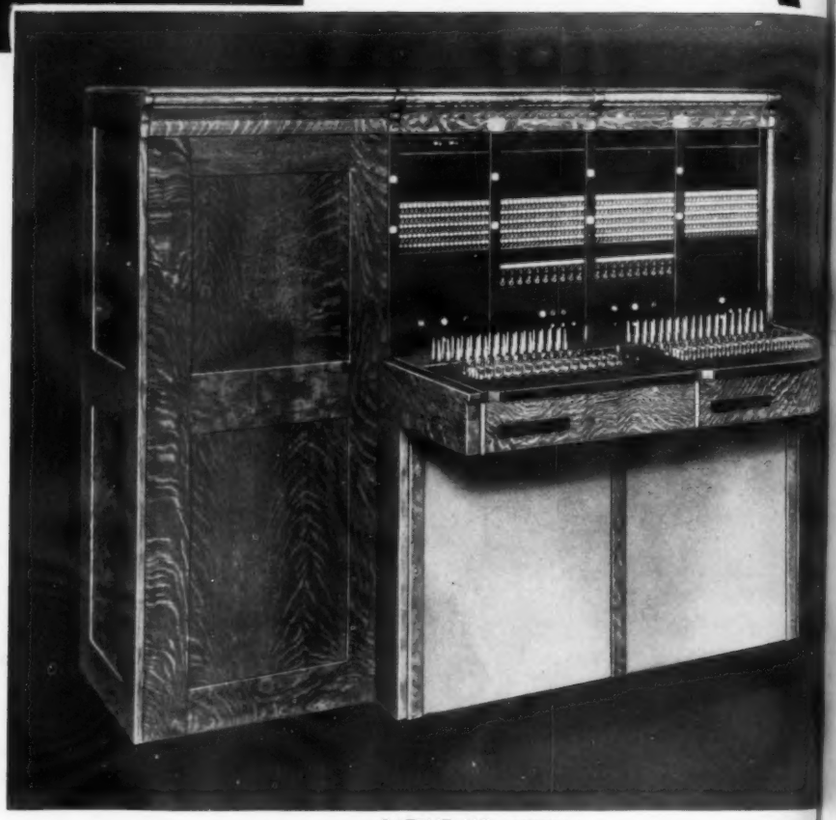
Borrowing, while occasionally necessary, may easily become a habit. The telephone company believes that their subscribers are entitled to exclusive use of the service and that if neighbors want to talk on the phone, they should order one of their own.

This "may I borrow your phone?" habit is about as pleasant and well liked as the habit of "may I borrow your paper?" The better plan is to install a telephone for your own personal use and also to subscribe for the *Bee* instead of taking it second-handed from your neighbor every week. Chronic "borrowers" cannot build communities, especially when their borrowing is more in the form of "mooching" which deprives someone else or some other business from earning a fair profit on the borrowed article.

If you are inclined to be "borrowsome," start now to overcome the habit and you'll be surprised how much better your friends will like you. —Barnard (Kansas) Bee.

R. C. R.

THERE ARE *More* KELLOGG *Manual* SWITCHBOARDS



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EDITORIAL

A Thought For The Commission

It is becoming less easy for public utilities to chart a course through current political and economic developments. This is especially so of the telephone industry because of the present uncertainty of what will be the activities of the newly formed Federal Communications Commission. According to notices the new commission will conduct a drive against "excessive" telephone rates and charges.

We doubt if there are any excessive rates but if this is to be a major function of the commission, it seems hardly out of place to bring to the attention of its members that telephone companies must, in the long run, earn a fair return on the property devoted to rendering service. The money of two classes of investors built the nation's telephone properties—stockholders' money and bondholders' money. Securities of telephone companies have been approved in most states for many years by public service commissions and this fact has had an important bearing on the wide distribution of telephone securities.

In many cases telephone stocks are held by thousands of small investors. Probably many of the bonds are classified as legal investments and are held in the portfolios of insurance companies, trust companies, colleges, churches and estates. These investments cannot be jeopardized without irreparable damage to the public welfare. The insurance policyholder, the savings bank depositor, has a right to protest when telephone securities are attacked. Furthermore, every user of telephone service is vitally interested in seeing the values of telephone securities preserved. As new plants and new lines are needed, money must be raised to build them. This money cannot be secured if telephone companies are not permitted to earn enough to pay going rates of return.

- Telephone Rates
- Fair Return
- The Stockholders
- Legal Investments
- Future Progress

R. C. Reno

EDITOR

The Telephone Business As We See It

Excessive Rates? How About Excessive Taxes? In the July issue of TELEPHONE ENGINEER a news item stated that the Michigan Bell Telephone company paid in municipal, state and federal taxes more than $3,100,000, or the earnings of 40 per cent of the average number of telephones operated by that company in 1933.

The Illinois Bell Telephone company states that in 1933 its taxes amounted to approximately 14 per cent of its total telephone revenues. This is an increase of 4 per cent over the year of 1929.

The taxes assessed against telephone utilities are increasing year by year to the point where their financial status is becoming precarious. And —yet parasite politicians and radicals are preaching and campaigning for lower telephone rates. How in the world they can expect telephone companies to stay in business with continual increases in taxes to say nothing of lower rates is out of the realm of our understanding. There certainly is no rhyme, reason or "horse sense" to such a proposal.

Telephone companies probably are, in the main, just like individuals—they don't mind being taxed if they were certain that their money was used legitimately and honestly to maintain government and for the upkeep of society in general.

All in all, if those trying to run our city, state and federal government would take a few lessons in business operations from the men who have guided the telephone industry safely and soundly through the depression, probably the governments would be on a sounder foundation and there wouldn't be the need for such exhorbitant taxes. Today subscribers asking for lower telephone rates might compare the service they get for the money they spend for telephone against the service they receive for their taxes. The former in many cases will outweigh the latter.

▲ ▲ ▲

Government Loans To Small Industries The Federal Reserve Banks are now giving their attention to Government loans to small industries. It is stated that they are now ready to receive applications for working capital loans from small enterprises.

The loans, under an Act of Congress approximating $280,000,000, may run five years, and the reserve banks will assume the risk up to 80 per cent. Generally the loans will be made through private banks with the right of re-discount with a reserve bank.

The Reconstruction Finance Corporation will also make similar loans, where an applicant cannot secure funds independently from a private bank.

Telephone companies finding their usual channels of credit restricted are eligible to loans through the reserve banks and the Reconstruction Finance Corporation. Companies that need additions and improvements to their plants and properties, but cannot provide money to pay for them, might make arrangements for loans and do the necessary work to get their plants and service in perfect order.

The fundamental object of the loans is to lend money in places where it will make more work and do the most good, regardless of the amount of the loans. Telephone construction will make work and will do good as there is nothing so indispensable to society as efficient communication service.

▲ ▲ ▲

An Open Letter To Paul A. Walker If our memory serves us right, we recall that in 1932, as chairman of the Oklahoma Corporation Commission, you were one of several state utility commission representatives who objected to the revised Interstate Commerce Commission uniform system of accounts for telephone companies.

At that time objections to the revised system were numerous. One was that the new system order interfered with and accorded little recognition to state commissions in telephone matters.

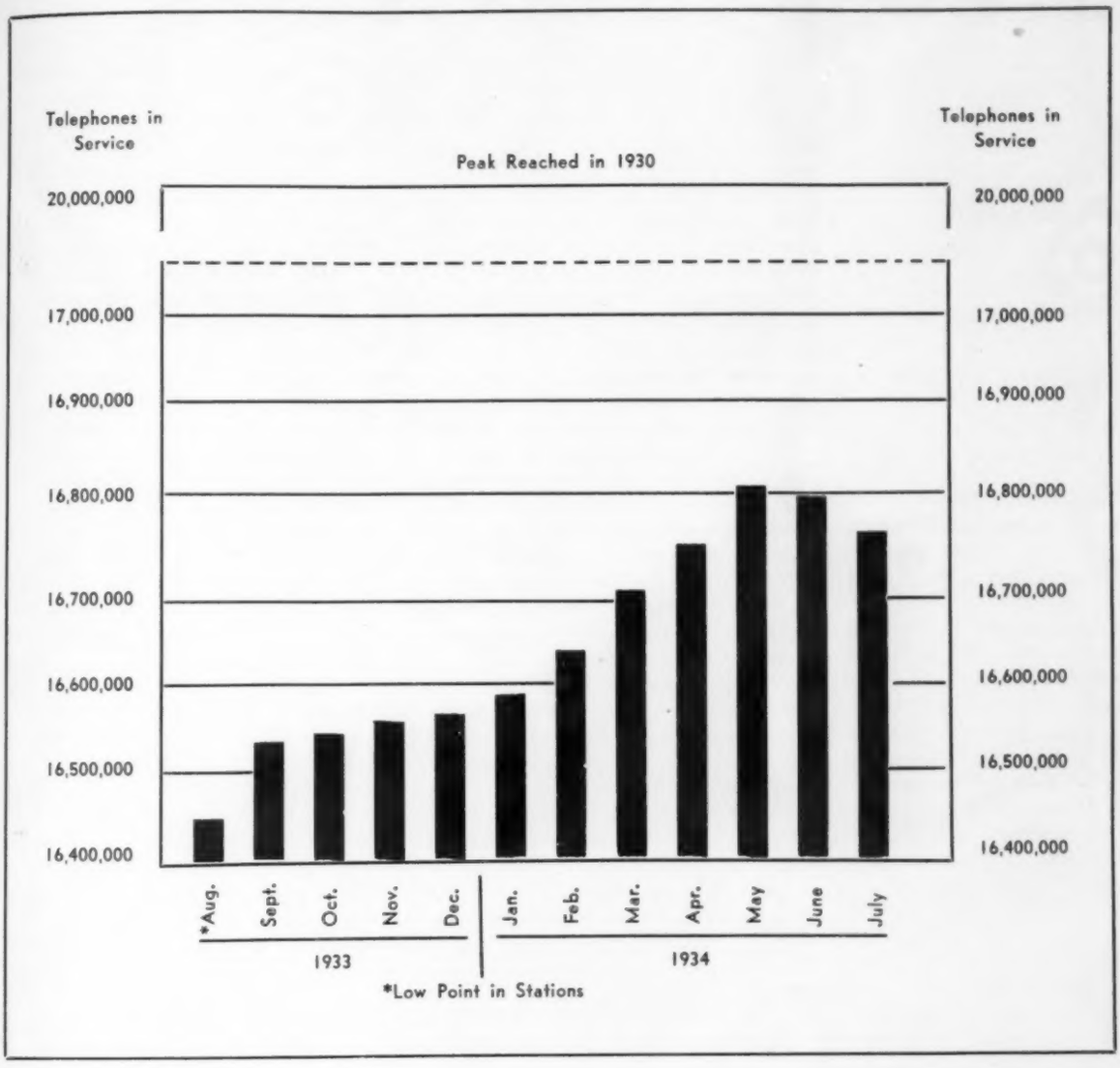
Now that the Federal Communications Commission has the responsibility of determining whether it alone is to say what telephone companies are to put in their cost account reports or whether state agencies shall share in that determination, we wonder what stand you, as chairman of the Telephone Division of the Federal Commission, will take relative to rights of state commissions in regulating telephone companies in this matter and others.

Today, with Washington exercising an abundance of authority over industry, all of us must see to it that the federal government does not run rough shod over business and destroy personal initiative to the extent where present efficiency and future progress is jeopardized. Especially is this true in the case of our communications systems, whose efficiency and progress must not be curtailed because of actions of any group of "radical" or "vote soliciting" politicians.

We trust that you will still recognize and protect the rights of state commissions in your new position and that you will do your utmost to check any efforts of the federal government which tend to violate states' rights or retard the efficiency and progress of the telephone industry gained under private enterprise, which has given this country the greatest telephone system the world knows today.

We will watch, with interest, your activity in this matter.

Monthly Telephone Station Barometer



THE LOSS in telephone stations continued in July. This loss is deemed as seasonal and should not cause alarm. Telephone men are confident that beginning with August or September the industry will again resume its upward climb toward the 20,000,000 peak in stations reached in 1930. In spite of Washington's interference in and regulation over industry there has been a slight upward trend in business. It is believed that this trend will gain momentum with the Fall's seasonal activity, which undoubtedly will mean an increase in the use of the telephone.

In many sections of the country telephone companies are resuming construction work to get their plants in shape to take care of the increased business that is due to come. In many cases construction has been necessary because of increased telephone business, resulting from consistent sales campaigns conducted by progressive companies.

POWER NOISE REDUCTION IN TELEPHONE CIRCUITS

By
B. C. BURDEN
Transmission Engineer
Lincoln Tel. & Tel. Co.
Lincoln, Nebraska

PART TWO

AN EXPLANATION of how transpositions in power and telephone circuits are effective in reducing inductive interference was given in the July issue of TELEPHONE ENGINEER. From the explanation given it should be easy to see how for a single metallic telephone line paralleling a power circuit, a simple yet very effective system of coordinated transpositions would be obtained by transposing the telephone circuit at the half mile points (omitting every other transposition) and the single and three phase circuits at mile posts as shown. Fig. 1 illustrates this ideal arrangement of transpositions.

Now if, instead of one telephone circuit, we have ten, the transposition design problem becomes increasingly complex. While fundamentally we have the same plan of obtaining zero magnetic and capacity coupling in the case of a multi-circuit telephone lead as we do in a simple single circuit parallel, we have the added problem of transposing the telephone circuits so as to keep crosstalk at a minimum and also to keep the telephone circuits electrically balanced to ground and along their length. The transpositions placed to reduce crosstalk must be positioned so as not to interfere with those placed for the purpose of reducing power noise.

As the number of telephone circuits increase above ten, the transposition problem becomes still more difficult, as a transposition scheme for a multi-circuit telephone lead must not only transpose the circuits against crosstalk between circuits on the same arm but also circuits on other arms above and below as well as against outside influences such as power lines.

The use of phantom circuits has also complicated the design of standard transposition schemes as the phantom circuit must be transposed to outside influences the same as a physical circuit.

An interesting paper which discusses some of the many complex problems involved in the design of transposition schemes was published in the July 1918 "Proceedings of the American Institute of Electrical Engineers." This paper reviews the results obtained in the design of the "Exposed Line" standard transposition schemes developed by the Bell System. The excellent work done by the Bell System in developing a system of transpositions sufficiently flexible as to be easily applicable to the many types of parallels encountered in practice yet which is completely effective in reducing noise and crosstalk to low levels, is a tribute to the engineering skill and thoroughness characteristic of the Bell System organization. The paper referred to is well worth reading if one is interested in the methods employed in designing the standard transposition schemes employed by the Bell System.

The small Independent plants having little, if any, toll line and with rural multi-arm leads seldom over a mile or so in length can take advantage of some simplification in transposition design. This simplification is made possible as the result of two conditions not present in the plant of the larger companies who operate long multi-arm toll leads; viz,

1—**The small company's rural leads are seldom longer than ten or 15 miles.**

2—**The small company's leads, either toll or rural, seldom carry more than one arm except for short distances.**

The fact that the rural leads and even toll leads of the small company are relatively short (as compared to toll lines several hundred miles in length) enables the designer of a simplified transposition scheme to save transpositions by ignoring the crosstalk coupling between circuits not closely adjacent in either a vertical or horizontal plane on the lead. For example, it is necessary to transpose the circuits on pin positions 1-2 and 3-4 quite frequently in order to avoid crosstalk, yet the circuits on pins 1-2 and 9-10 might be untransposed for distances as great as 50 miles without resulting in objectionable crosstalk between these particular pairs. This crosstalk relationship between pairs is shown in Fig. 2.

Table No. 1 below gives the approximate amount of untransposed line that can be tolerated (from a crosstalk standpoint) in a multi-circuit lead.

TABLE SHOWING APPROXIMATE MAXIMUM LENGTHS OF UNTRANSPOSED LINES CONSISTENT WITH LOW CROSSTALK

	Pairs to Pair	Maximum Length of Untransposed Line
	1-2 to 3-4	0.5 Miles
	1-2 to 5-6	4.25 Miles
Pair	1-2 to 7-8	35.50 Miles
to	1-2 to 9-10	55.50 Miles
Pair	1-2 to 11-12	0.80 Miles
	1-2 to 15-16	9.50 Miles
	1-2 to 19-20	55.50 Miles
	1-2 to 39-40	100.00 Miles
	Side to Phantom	
	1-2 to 1-4	0.20 Miles
Side	1-2 to 7-10	11.50 Miles
to	1-2 to 11-14	0.60 Miles
Phantom	1-2 to 17-20	16.20 Miles
	1-2 to 21-24	1.80 Miles
	1-2 to 37-40	62.50 Miles
	Phantom to Phantom	
Phantom	1-4 to 7-10	1.30 Miles
to	1-4 to 11-14	0.13 Miles
Phantom	1-4 to 17-20	2.45 Miles
	1-4 to 37-40	55.50 Miles

Above data is given for only a few circuits on a 40-wire lead. Source of this table is not known but it is believed to be from one of the large telephone laboratories.

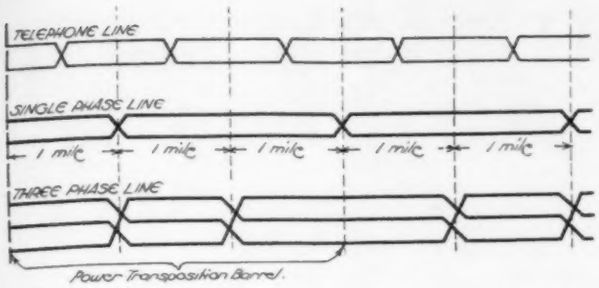


Fig. 1. Ideal arrangement of coordinated transposition in a power-telephone line parallel.

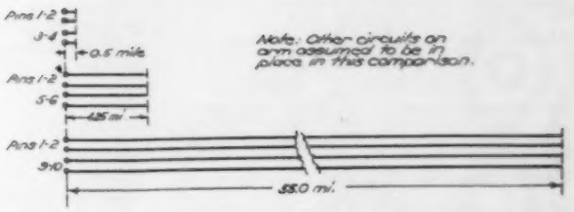


Fig. 2. Relative crosstalk tendency between circuits on a lead.

Using the table as a rough guide the transposition schemes shown in Figs. 3, 4, and 5 were worked out. These schemes are suitable for rural lines and short toll lines. By taking advantage of the large amount of untransposed line that can exist between certain of the circuits on a lead a few transpositions have been saved over the standard schemes employed on long toll lines.

Fig. 3 shows a transposition scheme suitable for use on a rural lead or on a relatively short toll lead which does not carry phantom circuits. The scheme should be applied in sections approximately one mile in length. If the power line is transposed at other than mile points the transposition sections should be shortened or lengthened so that the junction points marked (X) fall at either power transposition points or at the end of the power transposition barrel.

For telephone leads carrying up to 20 wires the transposition scheme shown in Fig. 4 can be used. This scheme is suitable for rural and short toll circuits. The chief difference between the transpositions shown in the top arm of the scheme shown in Fig. 4 and the scheme shown in Fig. 3 is a few additional transpositions in the former to take care of crosstalk between vertically adjacent pairs. If it is desired to standardize on one transposition scheme suitable for any number of circuits up to ten, the scheme shown in Fig. 4 may be used even though only five or less circuits are involved.

If a rural or toll lead carries phantomed circuits it is necessary to transpose both the phantom and the side circuits. The phantom transpositions serve the same purpose as the side circuit transpositions; viz, to prevent crosstalk to other circuits and reduce inductive interference from power circuits. Because of the close crosstalk relationship between the sides and phantom of a phantom group it is necessary to have four types of phantom transpositions all of which accomplish the same purpose; i. e., the transposition of the phantom circuit with respect to outside circuits. Although these four types of phantom transpositions affect induction from outside circuits in the same manner, each type acts differently with respect to the crosstalk relationship within the phantom group.

Fig. 5 shows each of the four types of phantom transpositions and their effect in balancing group crosstalk.

It is interesting to note that of the four types of phantom transpositions, the type (1) is the only one that does not change the crosstalk relationship within the group.

Fig. 6 shows a simple transposition scheme for rural lines which carry phantom groups on pin positions 1-4 and 7-10. This scheme will give good results both from a crosstalk and inductive interference standpoint for rural lines.

Transpositions in physical circuits are made either by the use of an extra long pin (9 inch) and a two piece glass, or with a special iron drop bracket. Fig. 7 illustrates the two types of construction. The use of a drop bracket is preferable to the two piece glass method and is the standard method employed by the larger companies.

Phantom transpositions are more or less difficult to make and care must be taken in making them as it is very easy to accidentally cut in the wrong type which might result in severe crosstalk within the phantom group. Phantom transpositions require the use of special iron brackets.

Fig. 8 illustrates how each of the four types of phantom transpositions are made.

Telephone companies should keep in close touch with proposed power line construction so that a system of coordinating transpositions can be worked out between existing telephone lines and any proposed power lines, and the power line properly transposed at time of construction.

Power companies usually look to the telephone companies for information as to where they should place transpositions in new power lines. Failure of a power company to place transpositions at the proper locations, or at all, will very likely result in severe inductive

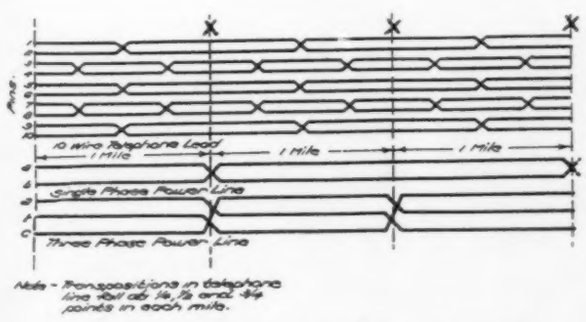


Fig. 3. Non-phantom 10 wire transposition scheme.

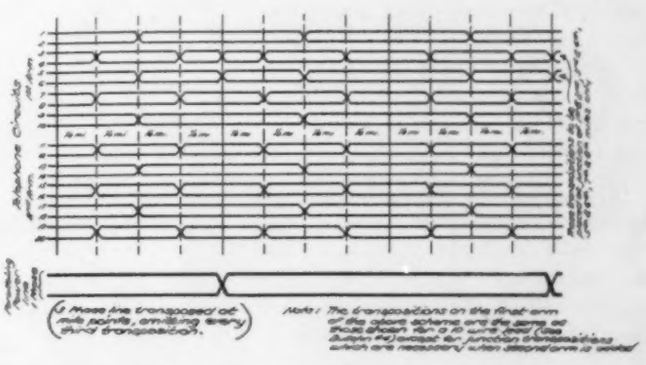


Fig. 4. Non-phantom 20 wire transposition scheme.

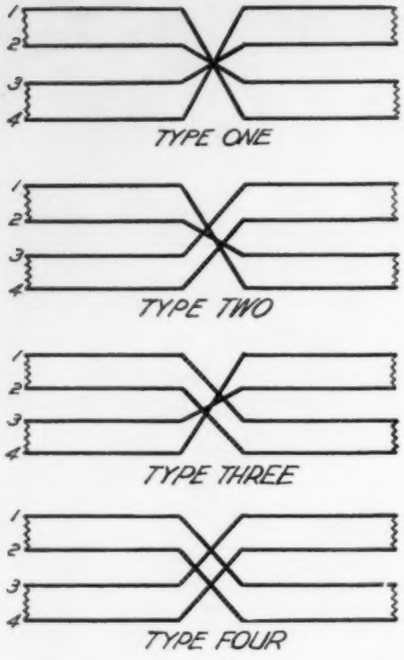


Fig. 5—Four Types of Phantom Transpositions

Type No. 1—Transposes side circuits to outside untransposed circuits—phantom to outside circuits, and phantom to groups on same lead.

Type No. 2—Transposes side 3-4 to phantom, and side to side, also phantom to outside exposures, and side 1-2 to outside exposures.

Type No. 3—Transposes side 1-2 to phantom, and side to side, also phantom to outside exposures, and side 3-4 to outside exposures.

Type No. 4—Transposes both sides to phantom, phantom to outside exposure. Does not transpose side circuits.

Fig. 6—Phantom transposition scheme for rural lines.

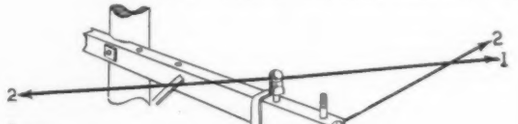


Fig. 7—Two methods of making physical transpositions.

interference on the parallelled telephone lines. Telephone companies must therefore be in a position to specify a transposition plan for power lines which may be built parallel with existing telephone circuits.

For the small company the following plan is generally a good one to follow in connection with proposed power lines:

Specify that three-phase power lines should be transposed so as to form three-mile barrels both inside and outside of the actual parallel, with no transpositions between adjacent power transposition barrels.

In cases where the telephone lines parallel a power line for less than three miles or more than two miles then the transposition barrel in the actual parallel should be shortened to the same length as the telephone lead.

(To be continued in September)

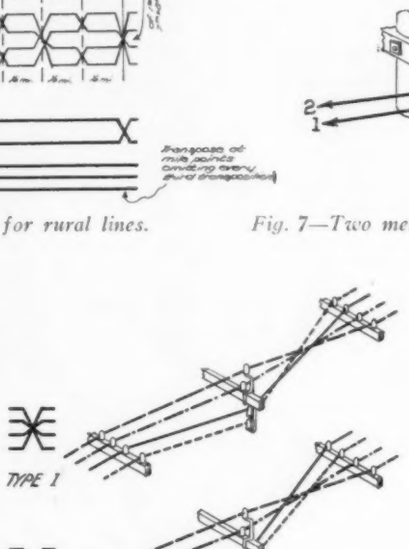


Fig. 8—Method of making four types of phantom transpositions.

GEORGIA COMPANIES GET INJUNCTION

A three-judge superior court issued an order enjoining the Georgia public service commission from putting into effect on eight of nine Georgia telephone companies a 17 per cent rate reduction decreed June 22.

The order is a temporary injunction which is to remain in force until such time as the case may be regularly heard before a master of a jury in the regular court procedure.

Two of the judges held that the rates fixed are confiscatory while the third member of the court, Judge E. D. Thomas, declared that there was uncontroverted proof that the members of the commission had promised Governor Talmadge to lower rates before getting their appointments and that, because of this, they were not qualified to fix rates. Judge Thomas then held that there was no need to pass on a rate fixed by a commission that was not qualified.

The decision of the three-judge court held that the rate schedules set up by the public service commission are unfair and do not permit the companies to make a reasonable return on their investment.

The companies obtaining the injunction were the Cairo Telephone company, the Central Telephone company of Georgia, the Consolidated Telephone company, the Dalton Telephone company, the Douglas Telephone company, the Southeaestern Telephone company of Georgia, the Statesboro Telephone company and the Thomaston Telephone company.

The court did not act on the ninth company, the Georgia-Continental Telephone company, which is the largest of the group. It is expected that a decision on this company's application for an injunction will be made in a few days.

No statement came from the commission but it is considered certain that the decision will be appealed to the supreme court.

TELEPHONE TRANSMISSION STANDARDS

This Series of Articles on Telephone Transmission Standards will be Followed by an Article on "A General Switching Plan for Telephone Toll Service" by H. S. Osborne. This Article will Conclude the Recent Series on Fundamentals of Telephone Transmission.

By
A. F. ROSE
Dep't of Operation and Engineering
American Tel. & Tel. Co.

(Continued from July)
(Third and last installment)

IF THE analysis of a particular toll center area shows the transmission difficulties to be largely associated with the tributary stations, a further analysis of each tributary separately will usually indicate what steps would clear up the transmission difficulty. In some cases this remedial work might take the form of a telephone repeater on the present trunk between the toll center and the tributary or perhaps the use of a higher grade conductor in this section. In other cases, it might be found that either the tributary office or the toll center office includes old types of cord circuits which have high losses. Some of the older equipments added as much as 3 or 4 db to a toll connection. Obviously, it would be uneconomical to apply remedial measures to the outside plant before such conditions were corrected. Again, it might be found that the use of more efficient subsets on a few stations would clear up the cases of high transmission.

Even after the plant is properly designed and installed, there still remains the matter of properly maintaining this plant if it is to give good service. In the Bell System an appreciation of this principle has resulted in the setting up of routines and maintenance practices to check transmission conditions from time to time. In the toll plant, for example, all toll circuits are tested at periodical intervals, these intervals being established by experience and technical consideration of the probable sources of difficulty.

The results of such tests show only a small percentage of trouble which individually would interfere with service, but which would cause complaints when added to other similar troubles on the same connection. They also frequently bring to light individual circuits or circuit groups on which transmission improvement can be obtained at small cost. This is particularly true on circuits employing telephone repeaters or carrier equipment, where vacuum tubes are used. The testing of the tubes at frequent intervals results in their replacement in the majority of the cases before they have adverse effect on service.

The general idea of preventative maintenance is also followed in the exchange plant, but as it is, of course, less susceptible to variations in transmission, the intervals for testing trunks, cord circuits, etc., are considerably longer than those followed in the toll plant. With present procedures, only 1½ per cent of the circuits in Bell System offices exceeded the maintenance limits when tested and corrective measures were readily applied before many of these troubles became sufficiently serious to adversely affect service. This percentage would without doubt be much higher on the initial tests of an office which has not been regularly routined.

One of the most important factors which affects both toll and local service is the transmission efficiency of station instruments. Since instruments are located on subscribers' premises, they are not as readily available for testing as the equipment in the central offices or in the outside plant. Normal station turnover and other visits, however, afford an opportunity for checking the efficiency of a large percentage of the instruments from time to time. In the Bell System it is the practice at the present time to test all transmitters between the time they are removed from service and when they are reused (except for a few of the latest types which have been in service for a relatively short period). Receivers require considerably less attention than do transmitters, but even these are given careful inspection and, in some cases, efficiency tests.

In magneto areas an important item in maintaining satisfactory transmission conditions involves proper routines for the replacement of the dry cells used in the subscriber's sets. Figure No. 6 shows how transmission falls off with the age of the local batteries. This is a problem which has equal importance either under the volume or the effective basis of design. The curve brings out clearly the desirability of replacing the batteries before they reach the cutoff point, beyond which transmission becomes poor very rapidly. The age at which a battery reaches its cutoff point varies with the type of battery and the use it receives. From a knowledge of these characteristics, reasonable intervals for routine replacement may be established. Also whenever the stations are visited for other purposes, routine talking tests

(*Please turn to page* 42)

Effect of Service Life of Dry Cells on Transmitting Efficiency of Local Battery Deskstand Set

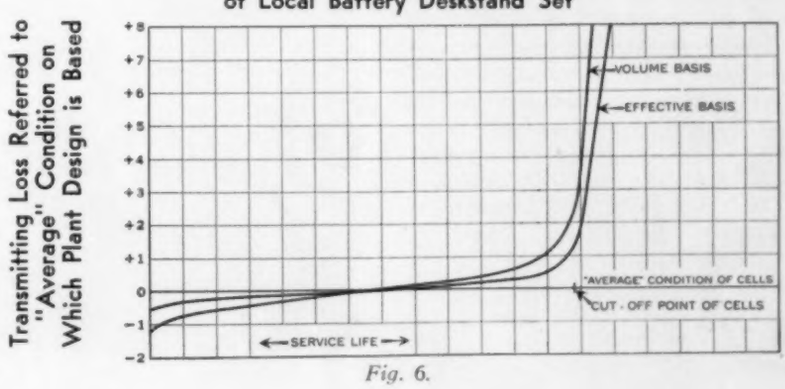


Fig. 6.

PRESENTING THE FACTS TO THE PUBLIC

In This Article, Mr. Kloidy gives Telephone Executives and Employees Some Clear-cut and Reliable Facts and Information to Present to "Racketeering" Politicians and Professional Agitators Attacking the Telephone Industry and to the Always Present Disgruntled Subscriber When They Attack the Telephone Company and Its Rates. Mr. Kloidy has done a Good Job in Nebraska in Quieting These Factions and We Urge Telephone Men in Other States to Take up His "Battle Theme" and Carry It to all Corners of Their Communities.

By
GEORGE M. KLOIDY
Secretary
Nebraska Telephone Association

WE HAVE for years, through our Nebraska Telephone Association's BULLETIN, by personal visits, district meetings and at state conventions, urged our people to acquaint the public with the facts about the telephone business, and, at this time, I reiterate that the lack of knowledge on the part of the public regarding the telephone industry is one of the greatest hazards of the industry and I urge that no effort be spared in making the public acquainted with the facts.

I am convinced that the losses in subscribers' stations were not and are not all due to the inability to pay the authorized tariff.

But a large part of such losses can be attributed to the ignorance of the public regarding the nature of the telephone business and the inexcusable ignorance on the part of some within the industry who do not know what it is all about and are unable to give an intelligent explanation to those seeking information.

But last not least, is what seems to be the lack of energy on the part of some upon whom the promotion of the welfare of the telephone industry depends.

I agree that there come times in our lives when continued progress seems difficult; when the very springs of thought and action seem dried up, when on every side we hear the paralyzing statement—"It can't be done." These seasons are trying and testing times. They try the soul and prove what stuff we are made of. I wish to say to those who may be faltering, do not let yourself fall behind because of unfortunate circumstances. You can commit no greater folly than to sit by the roadside of life until someone comes along and invites you to ride along to better times. Be energetic and ambitious. Let your ambition be like a star, for the darkest night that ever fell upon the earth never hit the light —never put out the stars. It only made the stars more bright as if in protest against the darkness.

Go out and enlighten those who are causing you damage because of their groping in the darkness—tell them the facts about the telephone business and tell it in a way they will be able to understand.

Every boiler room, shop, mill, office, has some sort of a crank who dotes on schemes to do things better, quicker. Through the contributions of these cranks some companies find themselves in an enviable position. Telephone companies need another kind of a crank—a contact crank, some one who will go up and down through the corridors, elevators, offices, directors' room, shouting, "We know it but the public does not! Tell it to the public! It is good to be good but it is better to have the goodness known! Tell the public the facts about the telephone business."

If the public is to form just judgment, it must know the facts; and what it is right for the public to know, it is the duty of the telephone company to furnish.

Telephone companies have been urged to advertise. In the main, the large companies do so extensively, however, in my opinion, their advertising is confined too much to the one subject,

George M. Kloidy

namely, telling the public about the convenience of having a telephone and the value of it in a social and business way and in time of danger, accident or a fire. Some companies stress the good service angle and perhaps they believe this sufficient to gain and hold subscribers.

I fully agree that this type of advertising is good and the public should be reminded of these facts especially during a time when they are liable to be overlooked because of necessity to curtail expenses.

However, I firmly believe it would be greatly beneficial to allot a substantial portion of the advertising budget to such educational items as would explain why certain rates are necessary and why the various operating practices of the telephone company.

Let us analyze this. What were the main reasons that caused such a large loss in subscribers' stations, many of which were not recovered and will not be recovered for some time to come? Was it because the subscribers did not know the use, convenience and the value of having a telephone? Was it because of unsatisfactory and inadequate service? Certainly not. We know the main reason was the inability to pay for such service regardless of how small the charge may have been. No amount of advertising would remedy this kind of a situation.

The other real reason for the loss of a large number of stations was the ignorance of the people regarding the nature of the telephone industry. Some one led them to believe the rates were

ANALYSIS OF A TELEPHONE COMPANY

$7500.00	own investment
7500.00	invested by public
5000.00	6% bank loan
$20000.00	total invested

Expenses per month		Income Per Month	
3 operators	$100.00	100 farm stations @ 1.50	$150.00
Manager	100.00	200 residence stations @ $1.50	300.00
Lineman	100.00	50 business stations @ $3.00	150.00
Depreciation	85.00		
Cost of money	100.00		
Rent and msl	115.00		
Total expenses	$600.00	Total Income	$600.00

The above represents normal times with the maximum number of stations in service. Shows the amount of income and expenses balanced. No speculative profit in the operation of the company.

The following shows conditions during a severe depression period when rates remain the same and expenses are reduced the maximum amount of $75.00 per month:

50 farm stations (lost 50) @ $1.50 per month	$ 75.00
150 residence stations (lost 50) @ $1.50 per month	225.00
42 business stations (lost 8) @ $3.00 per month	126.00
Total expense, $525.00; Total income	$426.00

Net loss of $99.00 per month.

The following shows what the result would be if rates were reduced 50c per station per month and all stations remained in service. The expenses also reduced to $525.00 per month:

100 farm stations @ $1.00 per month	$100.00
200 residence stations @ $1.00 per month	200.00
50 business stations @ $2.50 per month	125.00
Total expenses, $525.00; Total income	$425.00

Net loss of $100.00 per month.

The following shows the average results when rates are reduced. Experience proves that reduction in rates does not stop losses in stations although a few stations may thus be saved:

70 farm stations (lost 30) @ $1.00 per month	$ 70.00
160 residence stations (lost 40) @ $1.00 per month	160.00
45 business stations (lost 5) @ $2.00 per month	90.00
Total expenses $525.00; Total income	$320.00

Net loss of $205.00 per month.

A sample analysis of a telephone company which can be used as a model for an analysis of any company.

too high, the telephone company was making an exhorbitant profit and to register their protest they had the service discontinued.

For this reason, many who are well able to pay the tariff, are not having the telephone re-installed and even though they may again become subscribers, they are very liable to continue having an unfriendly feeling towards the telephone company serving them unless they are made thoroughly acquainted with the facts regarding the nature of the telephone business.

Let us again analyze to determine whether there is any basis for this contention. As an example, we will consider a community where 100 rural subscribers signed a petition asking for a reduction in rates and served notice on the telephone company to remove their telephones if the rate reduction was not granted by a certain date. Up to that time these rural subscribers kept their telephone bills fairly well paid up and there was no need to have the service discontinued because of lack of funds. (Nothing in the petition referred to unsatisfactory service, convenience and usefulness of the telephone. The rate charged was the only reason given). When the rates were not reduced as per their request, 40 or more of the 100 petioners refused to continue as subscribers and their telephones were removed.

It does not seem reasonable to presume that in an instance of this kind, 40 or more of those rural subscribers would suddenly have their service discontinued for any other reason than that of not understanding the problems of the telephone company serving them and believing the company was charging them an unjust and unreasonable rate. I am satisfied that had those subscribers thoroughly understood the problems of the telephone company there would not have been a petition and the resulting loss in stations.

As I have already stated, there are some in the telephone business who do not understand what it is all about any better than most of those outside of the industry and they are unable to give an intelligent explanation to those seeking information. There are others who do know what it is all about but the method they use in trying to justify their rates and practices is so complicated that the ordinary person receives no benefit in the way of clearer understanding.

At the request of the editor of TELEPHONE ENGINEER, I will tell you how I meet opposition to existing telephone rates by telling the simple story of how telephone service costs are built up. In my opinion, this is a simple and con-

vincing explanation of telephone rates.

In the pursuit of my official duties throughout the state of Nebraska, I frequently encounter opposition to existing telephone rate schedules in the various localities. This opposition comes either from individuals, groups, or committees appointed for the purpose of seeking a reduction in rates.

When I meet such individuals or groups and enter into a conversation with them, I ask if they would care to have me tell them in a simple and understandable way why the company serving them is in no position to make a reduction in its rate schedule and in every instance, I am invited to go ahead and tell them. Do you know what I do then and there? I organize a telephone company—on paper. I am going to tell you how I do it, because it is an argument and demonstration that all of you can use effectively.

In the case of an individual I say to him: "Let us suppose that this community is here just as it is, with the stores, offices, residences and surrounding farm territory. There is no telephone company and you and I decide to organize one and give this community telephone service. You have $5,000 that you are willing to put into the company and I have $2,500 which I am willing to put in with you.

We proceed to buy poles, wire, telephone instruments, switchboard and everything else needed and commence to build the plant. Before we have gone very far we find it will take $12,500 more to construct a plant adequate to the needs of the community so we manage to borrow $5,000 from the local bank at 6 per cent interest and we borrow $7,500 from the public, selling them either bonds, preferred or common stock on which the public expects to receive a return in same manner as the banker.

"Our next job is to determine what rates we shall charge for the service. We have put $20,000 into the plant. In this community that money is worth 6 per cent and costs the company $1,200 per year, whether we pay it in interest or dividends. That's what you could get if you loaned the money safely to somebody else and if you put it in a telephone plant serving the public you are entitled to at least as much.

"All right, let's see what our expenses are going to be. First we put down $100 a month—that's on the basis of 6 per cent on the total cost of the plant—as the cost of money.

"We'll need three operators and the least we ought to pay them is $100 a month for their services. We will make you the business manager at $100 a month which is not an extravagant figure (always put the other party in as manager and if you are talking to a group, make one the manager and the others as members of the board of directors and stockholders). I am experienced in the technical and practical side of the business and I'll take the job of lineman also at $100 a month.

"Part of this plant will be constantly wearing out and will need to be replaced as the years go on. There will be sleet storms and wind storms. We shall have to retire partly worn-out parts of the plant because newer and better ways of giving service are constantly being developed. That means we must put aside at least $85 a month for depreciation. This is what study and experience demand.

"We haven't enough money left to construct our own building, hence we shall have to rent adequate quarters. This will be a considerable item. There are also a lot of miscellaneous costs such as taxes, power, heat, stationery and other numerous items constantly cropping up. We shall put down $115 a month to take care of rent and miscellaneous expenses.

"Now, Mr. Partner, here's what we have as our monthly expense bill:

Wages for three operators	$100
Manager's salary	100
Lineman's wages	100
Depreciation	85
Cost of money	100
Rent and miscellaneous	115
Total	$600

Then I ask: "Is there any item in that list that anybody could object to as being too high or unnecessary?" The answer is no. I then go on to say: "We are going to give service to 50 business and 200 residence places in town, and to 100 farmers in the country. Suppose we charge $3 a month for the business telephone service and charge the town residence and the rural subscribers $1.50 a month,

"Then we have this calculation:

Revenues—	
Business telephones	$150
Residence telephones	300
Farm telephones	150
Total	$600

"Remember now," I say, "you are the manager. Would you reduce these rates any?' The answer I receive is something like this: "Why, the company would be giving service at cost, wouldn't it?"

"That's just it," I say. "We would be giving service at cost because money costs so much and wages, salaries, maintenance, rent and miscellaneous items cost so much. Thats what the telephone company that now serves your community is doing—giving you service at cost. It has been doing this all the years it has been in existence. Is it fair to ask them to serve you for less than cost now?" The reply I receive is about like this: "Why haven't these telephone men explained things to us like you have? We have no reason for demanding lower rates in the face of such facts."

I have been organizing telephone companies on paper everywhere I have had a chance to do so and have yet to get the first unfavorable reaction. I used this method to make my point when I appeared before committees in our state legislature when hearings were held on bills for a state-wide reduction in telephone rates. I organized a telephone company on paper and put the secretary of the committee in as manager and the other committee members as members of the board of directors. I pointed out that my analysis covered normal times and **what dividends were paid represented cost of money.** In times like at present, the company is in no position to stand a reduction in rates. The bills were indefinitely postponed.

The figures I use are not the result of any special study. I happened to use these figures once during a casual conversation when I picked up a pencil and a discarded envelope and set down these figures to illustrate my point. Since then I have found no reason for changing them. It is easier to make the public understand if small amounts are used. It can easily be explained that the amounts may be increased or decreased according to the size of the company, but the answer is always the same.

On page 18 is a simple analysis of a telephone company showing operation at actual cost and also showing what happens to the net income when rates are or are not reduced. Study it and make an analysis of your company along the same lines.

I am frequently asked why telephone men are not explaining their business to

(*Please turn to page 36*)

REPRINTS

State telephone associations and individual operating companies may secure reprints of Mr. Kloidy's article at a very small cost by writing *Telephone Engineer*, 185 North Wabash Avenue, Chicago, Ill. This story should be put into the hands of every telephone employee so he or she can present it to telephone subscribers and prospects.

ASSOCIATION EXPLAINS COMMISSION ORDERS

The Telephone Division of the Federal Communications Commission at a meeting August 1 presided over by Vice-Chairman Case, adopted the following Order:

TELEPHONE DIVISION
ORDER NO. 4

Pursuant to Section 215 (b) of the Communications Act of 1934 (approved June 19, 1934), IT IS ORDERED that each carrier subject to this Act engaged principally in wire telegraphy shall, on or before OCTOBER 1, 1934, file with the Commission a verified report in duplicate, showing:

(a) the methods by which, and
(b) the extent to which

it is furnishing interstate or foreign wire telephone service.

The report shall indicate clearly, among other things, the types and classes of wire telephone service rendered by such carrier; the conditions upon which the service is offered; the rates charged, and whether such rates are the same as or higher or lower than rates of competing telephone carriers for similar service; the facilities offered; the total revenue derived from such service and from each class of such service for each year beginning with 1925, and the ratio of such revenue to the total revenues of the carrier for each year reported; and, where such service is offered on a subscription or contract basis, the number of subscribers or persons contracting for each class of service for each year beginning with 1925.

IN A letter dated August 2, addressed to member companies, the United States Independent Telephone Association called attention to its recent interpretation of the Communications Act of 1934, relative to companies which do not come under the jurisdiction of the new board.

The Commission issued three orders, July 20, but they were vague as to what companies are exempt. The Association's letter, which follows, gives telephone companies some sound advice:

"Under date of July 20th the Federal Communication Commission issued three orders (No. 1, 2 and 3) which were sent to all telephone companies. Some of our members have asked whether the serving of these orders on all companies indicates the Commission has interpreted the New Act as applying to all companies. The Commission has made no interpretation as to which companies are under the Act and which are exempt. You will note each order states "That every telephone company subject to the Act shall" comply with the order. This leaves the question of exemption from the Act to be decided by the Company in accordance with its own interpretation. No doubt in due time the Commission will make a formal announcement of its interpretation, but this is not likely to occur for several weeks as the Commission has not as yet a complete staff to assist it in handling these matters.

"The Association in its circular letter to members dated July 2nd stated its interpretation of the Act. The Association believes this to be the one correct interpretation and that its members may be guided by it in determining whether they are or are not required to comply with these orders.

"The Association's position is that only those companies are subject to the Act that are able to complete an interstate toll call by the use of only their own facilities (equipment, lines, etc.). To do this a company must own the exchange at which the call originates, the entire toll line and the exchange where the call terminates. Of course all companies handle toll calls that terminate or originate on the exchanges of other companies in other states, or use another company's toll line between two points in different states, but these acts or services do not bring any company under the Communication Commission. IT IS ONLY when the company can handle an interstate call entirely by the use of its facilities that it is not exempt and comes under the Act. If in handling every interstate toll call a company must use the facilities of another company, it is exempt.

"If you are exempt you are not required to pay any attention to the orders just issued. If you are NOT exempt you should reply promptly and fully. The Commission has issued no forms on which to make reply."

Commission Orders Data on Telephone Rates

Within a few weeks the new Federal Communications Commission expects to have the groundwork laid for its study into the reasonableness of telephone rates.

It issued orders July 20 demanding telephone companies carrying on interstate business submit lists of their rates, accounts of interlocking directorates and other data that will be used in deciding whether rates are too high or too low.

Compliance with the order, which is to be done by Sept. 1, will give the Communications Commission full information about the operations of the American Telephone and Telegraph company, and other companies.

The commission asked companies subject to the Communications Act to file schedules of its charges along with "classifications, practices and regulations affecting such charges."

It asked for verified duplicate copies of contracts, agreements or arrangements with other carriers in relation to any traffic under jurisdiction of the communications agency.

The commission in asking for information as to interlocking directorates, particularly with companies making telephone equipment, called for verified statements, in duplicate, showing:

"The names of all persons or corporations in which such carrier may own stock or in which such carrier has any interest whatsoever because of common or interlocking directorates, officers or otherwise.

"Names and addresses of all officers and directors of said telephone carrier and of any person or corporation in which such carrier may have any interest whatsoever.

"The outstanding capital stock of all other corporations in which such carrier may be interested through stock ownership, common officers or interlocking directorates, or otherwise, or over which such carrier may have or exercise any control whatsoever so far as said corporation or corporations may be engaged in the manufacture or furnishing

of apparatus, equipment or supplies used or useful in the operation, maintenance or improvement of telephone systems or any experimental research or investigation work looking to or contemplating the development or improvement of equipment or apparatus used or useful in the operation, maintenance or improvement of any telephone system which may be subject to the provisions of the Communications Act of 1934."

New Deal Puts Boards Under One-Man Control

By DAVID LAWRENCE
From the Chicago Daily News

Although congress established bi-partisan commissions in communication and security control, the net effect of the latest functional set-up in each is to put in the hands of one man rather wide powers over the subjects that were presumably to have been the work of the whole tribunal.

Thus, by the simple device of creating a division within a commission and putting a commissioner at the head of such a division, the result is really to create a new commission for a special purpose. In the case of the communications commission, Commissioner Walker is to have charge of the telephone company inquiries and supervision, while Commissioner Gary is to handle broadcasting and Commissioner Stewart is to be concerned with telegraph and wireless and cable communications.

Each of these three problems involves many hundreds of millions of dollars of investment and each is large enough to have the special attention of all the commissioners. But, under the arrangement made to subdivide the work, one man is virtually in control of each division's work. While it is true that other members of a commission are assigned to a division, so that three memberes are supposed to be in charge, as a practical matter it means one man. For instance, where a member is supposed to function in more than one division, he can hardly be in attendance at hearings in all three.

Virtually the same thing has been set up in the securities exchange control commission, so that one-man control is conspicuous. . . . .

The system is the result of a confusion of the administrative and judicial function. As a matter of fact, the public has been given the impression that these commissions are neutral tribunals when actually they might just as well be executive bureaus under government departments for all the non-partisanship they display.

Indeed, unless commissioners accept in advance the White House policies, they are not retained in office, no matter what their political labels may be. For the power of removal by the president of a commissioner who does not agree with his policies has been exercised by Mr. Roosevelt in removing the late William E. Humphrey from office notwithstanding an expressed confidence in Mr. Humphrey's integrity and loyalty to his work.

So all commissioners are really adjuncts of the White House. The selection of division heads within a commission to handle the various problems of a commission which congress thought it was entrusting to five or seven men, as the case may be, is part and parcel of the plan to control the communications business and the investment and security business through the White House.

Accounting Problem of Commission

Adoption of uniform accounting rules is a problem the Federal Communications Commission faces. Back in 1912, the Interstate Commerce Commission exercised its discretion in promulgating a uniform system of accounts for telephone companies, which was revised by the Commission in 1932. Then utility commissions of a number of states objected, including Paul A. Walker, now a Federal Communications Commissioner, then chairman of the Oklahoma Corporation Commission.

Objections all around were numerous. One was that the new uniform accounting system order interfered with and accorded little recognition to state commissions in telephone matters. All the telephone companies favored the order. The commission, in a decision July 9, 1934, adopted a report standing by its uniform accounting order, with modifications, for information of the Communications Commission, to whom the responsibility now falls.

RAPS I.C.C. SYSTEM

Announcing a revised uniform system of accounts effective January 1, 1935, for telephone companies operating in New York state having operating revenues in excess of $50,000 annually, the New York State Public Service Commission took occasion to denounce the efforts of the federal government "to oust states from control over their utilities until the utter impossibility of coordinate state action has been demonstrated (not merely asserted)."

The Commission referred to the order of the Interstate Commerce Commission specifying a revised uniform system of accounts for telephone companies which it scored as causing confusion because of lack of action on the part of the I. C. C.

While state commissions make continuous use of information furnished under their accounting systems for the purpose of fixing rates, authorizing securities, transfer of properties and other regulatory matters, the Commission holds that it does not appear that the I. C. C. has ever made any appreciable use of the information obtained under its accounting system, and cites the interstate board's activities as merely "federal interference in state matters."

The new accounting system introduced by the state commission for the phone companies is consistent with systems recently prescribed for gas, electric and water companies and provides among other things that property be shown at original cost to the utility or its predecessor, that the straight-line method of depreciation be used, and that the companies maintain a continuing plant record or perpetual inventory.

WINS INJUNCTION

The Georgia Continental Telephone Co. was granted a temporary order restraining the Georgia public service commission from enforcing a rate reduction.

The Continental company was placed in the same class as eight other telephone concerns.

The order today was issued by Judges E. E. Pomeroy and Virlyn B. Moore with a separate opinion by Judge E. D. Thomas and was similar to the orders issued in the other cases by the same judges.

Judges Pomeroy and Moore said the new rates appeared confiscatory while Judge Thomas held the commission had been coerced into its decision through threats of dismissal from Governor Talmadge.

ASSOCIATED TELEPHONE

At a hearing in New York Federal District Court, upon the petition of the reorganization committee of the Associated Telephone Utilities Co., Judge A. C. Coxe entered an order determining that the plan of reorganization had been duly proposed under Section 77B of the National Bankruptcy Act and complies with the requirements of subdivision (b) of that section.

Counsel for the committee stated that the plan had been approved by holders of over 75 per cent of 6 per cent secured notes and over 63 per cent of debentures.

HOW TO RUN BETTER SALES CONTESTS

By
M. ZENN KAUFMAN

Acknowledgment is Made to Harper & Brothers for Permission to Pre-print from the Author's Book, "How to Run Better Sales Contests," August 1934. Send to TELEPHONE ENGINEER a Self-addressed Envelope for Your Copy of the "Perfect Contest Check List," a 48-notch Yardstick for Measuring the Perfect Contest.

Installment Three
SHOWMANSHIP

PLEASE don't ask me to give you a definition of showmanship. Showmanship is simply the art of putting on a good show. A contest without showmanship would be like a dinner without flavor.

Showmanship is that precious quality of contest strategy that makes an employee what he or she isn't. It is infectious, contagious and unrelenting in its influence. It helps take the man out of himself and this transformation is important in putting a man into the contest body and soul.

Human nature can be swayed to almost unimaginable extremes by good showmanship. George Graf, who has run many successful contests, tells me of a contest that was launched by assembling the men in a regular meeting and then having a newspaper boy break in suddenly, crying, "Extra, extra, read about the big war." The boy then passed out miniature newspapers which told the story of the forthcoming military contest.

Showmanship enters the picture at the very first stage of your plan when it comes to selecting a theme for your contest. A Cleveland company recently ran a "Big Bad Wolf" contest. That was good showmanship because it was timely. Showmanship should always be used in connection with the launching of a contest. This includes the holding of meetings such as Mr. Graf stages. A company that was using trips to Bermuda as a prize held the opening meetings of a contest on one of the Furness Bermuda boats as it rode anchor in New York harbor. Dinner was served on the boat. Motion pictures were shown and every man in the group was put into the frame of mind where he swore to himself that he is going to win the trip to Bermuda in the contest or kill himself doing it.

I want to jump to the other end of the contest for a minute and touch further on the subject of prizes. I do so at this point because it is here, at the very beginning of the contest, that you have to begin featuring the prizes and focusing the mind of each man on the thought that he is out to win. One good showman, using a new spring outfit for man and wife as a first prize, arranged with the store from whom this merchandise was bought to trim a window with just the merchandise and mark it as the prize in the current contest. That was one sure way of getting all of the men to visualize the prize accurately from the very start. If your folk don't visualize the finish of the contest at the very start then your contest has not really started.

Everything that is printed in connection with the contest gives you an opportunity to use showmanship. Some time ago a company ran what was called an "All Producers Week" in honor of an officer of the company. It was planned that at the end of week all of the orders should be presented to this officer at one time as a gift. Therefore instead of using an ordinary report form a special card was printed which resembled a gift box. Each salesman was given a supply of these "boxes" and in that way was impressed with the fact that he too was expected to make a little personal gift to the officer of the company.

M. Zenn Kaufman

The publicity that you will seek in connection with your contest gives you lots of opportunity for good showmanship. A Florida company arranged with a local newspaper to run off a few hundred extra copies of a front page of a newspaper featuring the contest and its progress.

Elements of Good Showmanship—What are the elements of good showmanship? Let's be specific and consider the ways to approach the problem of putting good showmanship into contest operation. Here is a list of the things that can act as vehicles for showmanship.

Life, Color, Realism—Actual life is better than pictures or words. When the boy broke into the meeting, yelling, "Extra, extra," as mentioned a while back, he was a good example of the first element of realism. Meetings of all kinds lend themselves to the use of life as an element of showmanship. Roy Fetzer always starts a contest with a meeting of some kind—frequently a dinner.

A black and white world is a dull world. Remember the attraction that color has for you.

What the theatrical people call "props," will always add to sales contests. A contest without props is like a show without scenery. Props are usually very inexpensive to acquire and should be used wherever possible. For instance, if you are running a war it is a simple matter to buy a few toy cannons and place them on your theoretical battlefield.

Sound—One of my friends had sheet music printed especially for a Roll of Honor contest. He bought a copy of "When The Roll Is Called Up Yonder I'll Be There," paraphrased the words, and for three dollars reprinted the song

(*Please turn to page* 34)

LINE and DESK

Ray Blain, A. I. E. E., Editor

Q.—Why can't cut-off jacks be used to advantage in multiple type switchboards to eliminate the cut-off relay?

A.—This system was used quite extensively in switchboards of an early day but was discarded due to its numerous disadvantages. In the first place this arrangement requires a large and bulky jack, which reduces the capacity of the switchboard. Also the wiring is complicated and series contacts are never desirable in a telephone circuit as they generally cause trouble. The cut-off relay is far the cheaper and best arrangement and was generally adopted for the multiple switchboard.

Q.—Why does the weight per foot of 100 pair 24 ga. cable lead covered compare with 22 ga. of the same type?

A.—This will depend to a great extent upon the make and specification of the cable as manufacturers methods differ slightly. One manufacturer gives the weight of 24 ga. 100 pair cable as 1.20 lbs. per foot and 100 pair 22 ga. as 1.58 lbs. per foot and it is believed that this ratio will be found fairly accurate in all cases.

Q.—Is it considered a desirable practice to rebutt cords on the switchboard or should they be removed to make repairs?

A.—Most telephone companies repair all cords without removing them from the larger type switchboards. This work is generally taken care of by the night switchboard man or someone designated for the job on the larger switchboards. While the repairs of cords without removing them from the switchboard does save some time, there is always a danger of shortening the cord too much to reach all jacks. On small or medium sized switchboards it is believed best to keep a stock of repaired cords on hand and replace cords showing wear or causing trouble. These cords can then be repaired at odd times for use again when needed.

Q.—When supporting aerial cable should an extra nut be placed between the suspension clamp and the pole?

A.—This practice is not considered necessary for small sized cable. When a large cable is being supported by a 16,000 lb. strand this extra nut is generally used.

Q.—Can a special cross-over clamp be purchased for use where one messenger crosses the other at right angles in the center of a span on aerial cable?

A.—Such a clamp was frequently used in the old days and can probably still be purchased. However, the ideal arrangement is to use two 3-bolt cable suspension clamps which are held together by a suitable bolt through the center hole.

Q.—What method is recommended for cleaning protector blocks and micas in central office protectors?

A.—Perhaps the easiest method is to brush them with a soft tooth brush which is usually effective. Sand paper or any other abrasive which destroys the dust proof surface of the carbon should never be used. A method always effective, and we believe the best is to have about 50 extra sets of carbons so that a like number can be removed from the main frame at one time and washed thoroughly in clean water. After the carbons have dried thoroughly they should be brushed lightly on a piece of clean dry cheese cloth Carbon blocks cleaned in this manner will be like new unless they have been severely burned or otherwise damaged and in such case they should be thrown away. Nothing can ever be gained by attempting to use defective protector blocks. Micas require very little cleaning though when their edges show burns they should likewise be discarded.

Q.—What is considered the most effective method of removing the insulation from flameproof jumper wire without causing the ends of the insulation to fray?

A.—Perhaps the only manner in which this can be accomplished easily is to slip the outer braid back about one inch and remove the inner insulation and clean the wire that is to be wrapped around the punching. This method may seem difficult at first though becomes easier with practice. The outer braid can be slipped easier if it is first pulled over the back of longnose pliers which tends to loosen it somewhat.

Q.—How many and how should wood or butt steps be placed on a pole?

A.—To prevent children from climbing poles and perhaps injuring themselves, many companies now use only one butt step on each pole. This step is placed about 3 feet 6 inches from the ground level and the first iron step three feet above that. This arrangement makes it almost impossible for small children to climb poles and the larger ones will generally climb them if they take a notion even though they be without steps.

Q.—When dials are placed on switchboard positions is it considered best to place them forward or to the rear of the key shelf?

A.—Operators generally prefer that they be placed back as near the cord rail as possible. The average operator sets close to the key shelf and if the dial is located far back she can reach it with less elbow bending and effort. With this arrangement the key shelf also acts as an arm rest while dialing. Mounting the dial on a slight angle so that it tends to face the operator is also generally considered an advantage.

Q.—When stringing drop wire is it considered a satisfactory practice to make attachments to trees?

A.—This is a practice that should never be encouraged though may be used when it cannot be conveniently avoided. When making such attachments all small swaying branches should be trimmed to clear the wire as otherwise its life will be short.

Q.—Is the installation of keys to silence ringers at a subscribers set considered good practice?

A.—As a rule subscribers should be furnished any service they desire and are willing to pay for. However, the installation of keys should not in general be encouraged as they frequently cause trouble. When keys are installed to silence ringers at certain times, subscribers frequently forget to switch them when the bells are supposed to ring and finally become dissatisfied with their telephone service in general.

OPTIMISM KEYNOTE OF CONVENTION

THE 600 odd delegates attending the 38th annual convention of the United States Independent Telephone Association, Tuesday, Wednesday, Thursday and Friday, July 10-13, at the Stevens Hotel, Chicago, went back home proclaiming the convention "as the best" in recent years.

Since the 1933 convention many new developments have arisen which have influenced the Independent telephone industry and telephone men from all corners of the country came to Chicago to get all the information possible about the new problems confronting the industry.

This they did because the convention was given over to discussions and explanations of "The Communications Act of 1934," N. R. A. telephone code, uniform accounting, new depreciation rulings by the Internal Revenue Department. After complete explanation of these various subjects by President F. B. MacKinnon, Attorney A. L. Geiger and Dr. David Friday, those attending the convention could see a bright future for the Independent telephone business and saw that the industry was still an influential factor in the telephone field today.

Secretary C. C. Deering's report at the first session of the convention gave a brief resume of the association's activities for the past year.

Attorney Geiger discussed the making of contracts for telephone service with federal agencies under the N. R. A. and said he was trying to get a ruling for those companies who have not signed the N. R. A.

In his annual report President MacKinnon stressed the need for uniform accounting for telephone companies, regulatory commissions in every state, better public relations and more attention to maintaining plants and to giving better service.

After his report President MacKinnon appointed the following as members of the nominating committee:

W. C. Henry, Bellevue, Ohio, chairman; B. L. Fisher, Martinsville, Va.; and J. H. Agee, Lincoln, Neb.

They were to submit the names of 12 telephone men for election to fill the vacancies on the board of directors caused by the death of Henry A. Barnhart, Rochester, Ind., and Lyman S. Gardner, Waco, Texas, and the expiration of the terms of E. C. Blomeyer, Chicago; F. E. Bohn, Fort Wayne, Ind.; W. G. Brorein, Tampa, Fla.; Chas. C. Deering, Des Moines, Iowa; E. R. Hannibal, Everett, Wash.; W. Roy McCanne, Rochester, N. Y.; W. J. Melchers, Owosso, Mich.; Samuel Tucker, Pleasanton, Kans., and G. A. Yanochowski, Chicago.

Wednesday's session was opened by the introduction of three pioneers by President MacKinnon; P. Kerr Higgins, St. Louis, with 53 years' telephone experience, William H. Bryant, Mobile, Ala., with 49 years of service, and J. G. Ihmsen, Albany, N. Y., with 30 years in the telephone business.

Resolutions relative to the deaths of Mr. Barnhart and Mr. Gardner were then read and adopted by the convention.

President MacKinnon then stated that certain sections of the by-laws of the Association should be changed to meet the requirements of the N. R. A. He presented the following amendments which the directors submitted for a convention vote:

Omission from section 2 of article 4 the following sentence:

"No operating company shall be admitted to or be entitled to retain membership in this association unless it shall agree to and shall conform with such standards of practice as have been or may hereafter be adopted by this association."

The amendment proposed for section 5, of article 4, read:

"Membership in this association may be discontinued upon the affirmative vote of three-fourths of the board of directors for the following reasons:

a. Retirement from the industry.
no longer eligible.

c. Failure to pay dues.

d. In case of those companies enrolled through the state associations, failure to continue as members of such state associations."

Article 5, section 2, amended, read:

"Special meetings of members of this association may be called at any time and place by authority of the board of directors or by the executive committee upon the request of 20 per cent of the membership."

The amendments were approved.

A resolution giving the Association's N. R. A. code committee authority to represent the Independent industry in Washington was submitted and adopted. The committee is composed of John H. Agee, vice-president and general manager, Lincoln Telephone & Telegraph Co., Lincoln, Neb.; E. C. Blomeyer, president, Telephone Bond & Share Co., Chicago; John P. Boylan, president, Rochester Telephone Corp., Rochester, N. Y.; Geo. X. Cannon, president, Northwestern Telephone Co., Freeport, Ill.; Wm. C. Henry, general manager, Northern Ohio Telephone Co., Bellevue, Ohio; Houck McHenry, president, Capital City Telephone Co., Jefferson City, Mo.; together with the president and secretary. Louis Pitcher, general manager, Dixon Home Telephone Co., Dixon, Ill., is the substitute for Mr. Cannon during his illness.

Mr. Geiger discussed the depreciation procedure of the Internal Revenue Department as specified by the existing rulings, Treasury Decision 4422 and Mimeograph 4170. This subject will be discussed in a future issue of TELEPHONE ENGINEER.

Thursday's session was opened by the report of the nominating committee. The report recommended the re-election of the following as directors:

E. C. Blomeyer, Chicago, F. E. Bohn, Fort Wayne. Ind., W. G. Brorein, Tampa, Fla., C. C. Deering, Des Moines, Iowa, E. R. Hannibal, Everett, Wash., W. J. Melchers, Owosso, Mich., Samuel Tucker, Pleasanton, Kans., and G. A. Yanochowski, Chicago.

W. N. McAnge Jr., Bristol, Tenn., was named to take the place of W. H. Bryant, Mobile, Ala., who has retired and Geo. A. Scoville, Rochester, N. Y.., to take the place of W. R. McCanne, Rochester, also retired.

J. W. Walton, Broken Arrow, Okla., and J. Y. Rust of San Angelo, Texas, were named to fill the vacancies on the board created by the deaths of Henry A. Barnhart and L. S. Gardner.

The nominees were unanimously elected.

Dr. David Friday, noted Washington economist, was the guest speaker on the program. He gave "An Economic Appraisal of the Past Year" in which he discussed the failure of the N. R. A., A. A. A. and other activities of the Washington administration. He compared the development of the electric and power fields during the past four years with the loss in telephone stations.

OFFICERS RE-ELECTED

At the meeting of the new Board of Directors the officers of the association

(*Continued on page 36*)

WEATHERPROOFED TELEPHONE WIRES

By
W. J. LALLY

IN THE pioneer days of the telephone industry, distribution was effected by the use of a single galvanized iron wire extending from the central office to the subscriber's station, the return circuit being through ground. The wires for the various subscribers were grouped on pole lines extending along the streets and highways, and at each subscriber's premises a wire was "dropped off," i.e., extended from the pole line to the subscriber's house or business establishment. Thus the wire extending from the main distribution line to the subscriber's premises early came to be known as a "drop."

With the growth of the industry, and particularly with the advent of the metallic return system, the number of wires required became so great that space limitations and the matter of appearance made the development of a more compact system of distribution essential. These service demands resulted in the development of the early types of multipair cable, and of a special wire for "drops".

The earliest drop wire was a twisted-pair wire with 14-gauge hard-drawn copper conductors, each of the conductors being rubber-insulated and covered with a weatherproofed braid. A 17-gauge copper-clad steel conductor was later substituted for the larger copper conductor, the steel providing the requisite strength and the copper, the necessary conductivity. Subsequent major changes in drop wire have been the adoption of a bronze alloy as a conductor material for the 17-gauge size, and the development of a parallel-type of wire in which the two rubber-insulated conductors, untwisted, are placed within a single weatherproofed braid. At the same time many important though less obvious improvements have been effected in the rubber insulating compounds and weatherproofing materials.

Rubber compounds deteriorate under the influence of sunlight, or other light rich in ultra-violet, due to oxidation stimulated by the actinic rays. This deterioration is exhibited by a tendency of the rubber to crack, the failure commonly being termed "sun-cracking". Weatherproofed braid inhibits this type of failure by serving as an interposing screen between the rubber and the source of light, at the same time shielding the rubber from the oxygen of the air. In addition, it provides protection against abrasion and other mechanical injury.

In the manufacture of drop wire the conductors are first drawn to size and are then provided with a coating of tin, which serves the dual purpose of protecting the conductor from corrosive attack by the sulphur in the insulating compound, and of protecting the latter from the deleterious influence of the copper and its salts. Over the tinned conductor is extruded a covering of rubber insulating compound. In the modernized process developed and used by the Western Electric Company at its Point Breeze Works for the manufacture of rubber-insulated wire, the extrusion and vulcanization of the insulating compound is a continuous operation. In the manufacture of parallel drop wire by this process, the two conductors are insulated simultaneously and are joined together by a fin of rubber compound. The fin facilitates the duplex extrusion and serves to hold the two insulated conductors together during the early stages of manufacture, thus eliminating the necessity for a subsequent pairing operation.

After vulcanization, the two insulated conductors are covered with a single cotton braid which subsequently is weatherproofed. The braid used for the greater part of the weatherproofed wire employed in the telephone plant is formed from a flat multi-end strand of two ply unbleached cotton yarn. For wire intended for use where numerous tree contacts cannot be avoided, however, a harder braid of hawser cord, formed by cabling several threads of cotton yarn with a fairly tight twist, is used to provide the greater resistance to abrasion required by this type of service.

The weatherproofing employed by the Bell System for its outside distributing wires comprises thorough saturation of the cotton braid with a crude-oil, asphalt, and montan wax compound, subsequent application of a continuous smooth coating of stearine pitch over the saturated braid and, lastly, application of a coating of ground mica to the surface of the pitch-finished wire. The saturant used resists migration at high summer temperatures well, and the stearine pitch forms a tough adherent coating which is highly resistant to abrasion and to weathering. The coating of mica which is applied over the stearine pitch serves principally to prevent sticking between adjacent convolutions of the wire when the wire is coiled, although some improvement in abrasion resistance is effected by its use, and it also serves to reflect some of the incident sun's rays.

Because of the large quantity of drop wire used by the Bell System and the desirability of securing as long a life for it as is economically practicable, studies of all materials used and of the various processing steps are being continually carried on. Facilities are available at Bell Laboratories for carrying out all the steps in applying the protective coatings and for testing the finished product under accelerated conditions.

A braiding machine permits braids of various types and of different materials to be applied to test specimens of insulated wire. In this way it is

(*Please turn to page 38*)

Fig. 1—Samples of old and new type weatherproofing after two months of artificial weathering.

They rebuilt their entire outside plant, when all they needed was the

RIGHT KIND OF BATTERIES!

AN INDEPENDENT telephone company in the Middle West had been receiving numerous subscribers' complaints of poor transmission.

The management went heavily into debt to rebuild their outside plant, thinking that new poles, better splices to cut down resistance and the old wire tightly stretched would greatly improve transmission.

After going to all that expense, they found that transmission was no better, if as good, as it had been before. *Then* they checked their dry cells, and found the trouble. They had been using batteries that did not *sustain their voltage.*

The EASE with which your subscribers hear one another depends in great measure on the voltage of their local transmitter batteries. The loudness of the voice at the receiving end of the line falls off much more rapidly than the battery voltage, which emphasizes the importance of using batteries which sustain their voltage to the best degree.

Eveready Long Life and Columbia Gray Label Telephone Batteries have most excellent voltage characteristics. Tests conducted in strict conformance to those of the Bureau of Standards show that three of either of these batteries, connected in series, deliver 90% or more of their entire life at or above 3.5 volts.

This sustained voltage plus the long life given by these Telephone Batteries mean fewer poor-transmission complaints from customers and extra *profits* for the telephone company.

Give your subscribers the good, sustained transmission they have a right to expect and save your company money by using the batteries that have proved to be the best and most economical in the long run . . . Eveready Long Life and Columbia Gray Label Telephone Batteries.

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Please send me a FREE copy of your new book, "Transmission Improvement in the Local Battery Exchange," by B. C. Burden,—well known writer on exchange operation problems.

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NEWS OF THE MONTH

Charles Crane of Terre Haute, Ind., has been appointed manager of the Washington, Ia., exchange of the Iowa Continental Telephone Co. Lloyd Morrison, former Washington manager, will move to Grinnell to be in the district office.

The Downs telephone exchange of the Illinois Commercial Telephone Co. is to be discontinued and that territory is to be served from both the Illinois Commercial exchange in Leroy and the Wabash Telephone Co.'s exchange in Bloomington.

Fire of unknown origin recently destroyed the barn in Wisner, Neb., in which S. C. Pearsall, manager of the telephone exchange, had nearly 400 bushels of corn, and telephone equipment and supplies valued at better than $500, the telephone firm renting the building for storage purposes.

The Greenfield (Ind.) Telephone Co. has been sold to the Union Telephone Co., with its principal office in Indianapolis. The consideration, according to the bill of sale, was "in consideration of the issuance of 2,624 shares of no par stock of Union Telephone Company."

Articles of voluntary dissolution of the Greenfield Telephone Co. and articles of reorganization of the Union Telephone Co., with L. O. Verckler as president and M. C. Beamer as secretary, have also been filed in the recorder's office.

Lester Price of Mt. Blanchard, O., has become manager of the Ohio Standarl Telephone Co. in Republic, Bloomville and Fireside. He succeeded L. H. Schorger, who resigned after serving five years.

The Interior Telephone Co., which owns 15 exchanges in Iowa, including the Grinnell exchange, have moved its central accounting office to Grinnell. Offices will be maintained in the company's office building which has undergone remodeling. K. E. Vine, chief accountant of the company, will be in charge of the office.

Contractors estimate that a total of $15,000 was spent on new structures and $5,000 on remodeling in Grinnell for the 30-day period ending June 30.

Authorization of a $15,000 stock issue by the Bristol (Wis.) Telephone Co., to cover acquisition of the Wilmot exchange was authorized by the public service commission of Wisconsin in an order made public in Madison. The Bristol company had sought a $30,000 issue but authorization was only given for half the amount. The Wilmot exchange is now a part of the New Era Telephone Co. in Kenosha county. The announcement that a $15,000 stock issue was authorized was the first announcement made by the commission relative to such a merger.

Woodleaf Mutual Telephone Co. of Woodleaf, N. C., has been incorporated to operate a telephone system with no capital stock. Incorporators were: Hugh Benson, S. H. Morgan and C. A. Furr, all of Woodleaf.

After paying all expenses of operating its exchange in Idaho, Ohio, last year, the Ohio Standard Telephone Co. had but $87 left to cover depreciation, taxes and a return on its investment, it told the Ohio Public Utilities Commission in an application for permission to abandon that exchange. In boom times, 1928, there were 103 subscribers at the Idaho exchange, the company points out, but with the depression that number has dropped to 70.

Herman Studier, manager for the Lincoln (Neb.) Telephone and Telegraph Co., in Milford since June 1, 1933, has been named manager of the Sterling and Adams (Neb.) exchanges, with headquarters in Sterling. In his new position he succeeds J. E. Caley, who retired from active service on July 1.

The Star Telephone Company's exchange, after being located for a score of years in the B. E. Hartman building, in Seville, O., will move to a building purchased on E. Main street, owned and formerly occupied by the Seville State Bank. The change will be made about December first, when it is expected a new automatic system will be installed. Lisle Gorham is manager of the exchange.

J. T. Trabue, Laddonia, Mo., is considering buying and consolidating the two telephone systems in Vandalia, Mo.

The Missouri Public Service Commission has ordered an audit and appraisal of the property of the Southwestern Bell Telephone Co. used for telephone service in Richmond, Mo., to determine the fair valuation of the property for rate making purposes and the reasonableness of the existing telephone rates.

In accordance with program arranged prior to departure of Paul A. Walker, July 9, for Washington, his resignation as member of the Oklahoma Corporation Commission became effective July 11 on receipt of a telegram by Governor Murray stating that Walker had qualified as a member of the Federal Communications Commission. Immediately thereupon Reford Bond of Chickasha, took the oath of office as member of the Corporation Commission succeeding Walker. The Oklahoma commission then held a reorganization meeting and elected E. R. Hughes chairman. According to established procedure another reorganization meeting will be held in January after another corporation commissioner has been elected for the six-year term beginning at that time. The new commissioner will succeed Hughes, present Republican incumbent, and new chairman, but no longer a candidate for reelection, and probably will be either A. S. J. Shaw of Oklahoma City, or Paul Stewart of Antlers.

Prescribing that such action shall not be binding upon the commission or the company in any future proceeding involving rates and or service, the Ohio commission authorized sale of property of the Deshler Farmers Mutual Telephone company to the Deshler Telephone company for 150 shares of no-par common stock to be issued at a declared value of $5 per share and, also, authorized the purchaser to issue these shares.

The Board of Directors of the Ohio Independent Telephone Association, at a recent meeting at Columbus, selected May 1 and 2, 1935, as dates for the next annual state convention. Association officers were appointed as a standing committee to complete all arrangements for the meeting. Plans were also completed at the meeting for a fall series of district gatherings to be held during October and November, time and place of the meetings to be announced when local arrangements have been made.

The only country in Europe which does not have telephone service with London is Albania.

Every TOLL CALL
is "well in hand."

Elapsed Time Records
PRINTED
TO THE SECOND

To cut down the losses from overtime allowances on toll messages, a new model Calculagraph, No. 30, has been constructed which will print elapsed time to as small a division as one second. This model is equipped with a self-starting, synchronous motor for 60 cycle, and either 20 or 110 volts regulated alternating current. The mechanism is so designed that it can be fitted to the Model 6 spring driven Calculagraph at a reasonable cost.

Sample imprints sent anywhere in the world on request. Please state the serial numbers of Calculagraphs now in use in your exchange, and estimates for converting them to the Model 30 will be provided.

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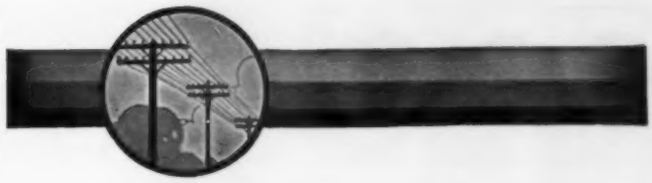
CALCULAGRAPH
THE ELAPSED TIME RECORDER



Phillip's Telephone Cords for Economy

Both by repeated tests as well as under actual conditions of service, Phillips' telephone cords show an extraordinarily low cost per year of service life. This is because of the exclusive method of construction used and the careful selection of materials with which they are built.

Everybody knows how ragged and frayed ordinary cords soon get. Phillips' cords do not begin to show signs of wear until long after others have been discarded. They are covered with a newly-developed, tightly-woven material to form a compact, smooth, silk-like braid, which retains its attractive appearance even after years of hard service.

Phillips' cords will not form a permanent kink. Thus another frequent source of wear is eliminated. And their insulation resistance is not only high to begin with, but remains high even under the most severe conditions.

For a new experience in cord economy, specify Phillips' cords on your next requirements.

PHILLIPS PRODUCTS INCLUDE:—Bare and Insulated Copper Wires—Rubber Insulated Wires—Enameled Wire—Magnet Wire —Power Cables—Switchboard Cables—Paper Insulated Cables — Flexible Cords — Electrolytic Copper Rods, Shapes, etc.

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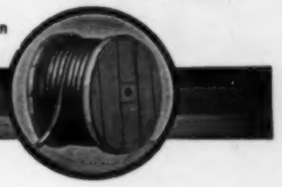

RAMBLEGRAPHS

By J. A. Smith

Rambling around the convention floors of the recent National convention we met many old friends from different sections of the country, some of them here for their first convention. While there were fewer representatives from many companies we did find that executives and managers were in attendance representing more companies and exchanges than we have seen in recent conventions.

* * *

Lon. J. Darley, manager of the Mississippi State Utilities company, with headquarters at Jackson, Miss., made his appearance at the convention for the first time. Darley formerly lived in Dallas, Texas, where he was employed for many years by the Dallas Telephone company. Later he became the manager of a group of syndicate companies, but for the past few years he has resided in Jackson, Miss.

* * *

Walter Gallon, manager of the Antigo Telephone company, Antigo, Wis., and president of the Wisconsin Telephone Association, is a fellow we always like to meet. He invited us up to Antigo and to a fishing trip in the famous Wisconsin woods, but we are afraid this invitation will have to go unheeded. While we love fishing and outings, we have never persuaded our Pontiac to venture that far into the Northwest. Gallon feels that we are headed for still better times.

* * *

S. A. Lane, who is president of the Arkansas Telephone Association as well as manager of a group of exchanges down "Arkansaw" ways, visited TELEPHONE ENGINEER's booth at the convention, and congratulated us on the appearance of our publication. In exchange of courtesies we congratulated him on at last having a good cement road from Texarkana to Memphis, something we have bumpingly wished for all these years. He was chaperoned around the convention floor by C. A. Vedder, one of the most efficient and courteous employees the Southwestern Bell Telephone company ever had or ever will find.

* * *

Then there is James N. Cox of Cookville, Tennessee, who hardly ever misses a convention in Chicago. And we believe that his company and the state he represents, profit by his visits to the National convention. Some of these days we are going to stop off down at Cookville and tell the people what a progressive telephone man they have in their midst.

* * *

Rambler family feels honored that the Hubenthal family of Oklahoma City stayed over an extra week and enjoyed the fair while visiting at the Smith home on a number of occasions. Naturally Hube represented the Oklahoma Association at the convention, but he also brings the family along to enjoy the city while he works.

* * *

H. M. Stewart, managing secretary of the Texas Telephone Association, represented that state. Outsiders as well as Texas representatives told Rambler that the Association in that state was in excellent shape and that they were well pleased with the way matters are being handled.

* * *

George M. Kloidy, secretary of the Nebraska Telephone Association, paid us a visit and promised to furnish us with an article of interest to telephone executives, managers and employees for publication. And he made good on his promise, too. Rambler has read the article and he believes it the best we have had for some time. It appears in this issue and we urge you to read and pass it on to your employees. We believe that the article is so important that we have ordered reprints made, and these can be had in any quantity for the cost of the printing, which is very small.

* * *

We were glad to see the Telephone Independent Pioneer Association honor P. Kerr Higgins of St. Louis, Mo., by electing him president of the association for the ensuing term. Mr. Higgins lives and breathes the interests of the telephone industry and his services of more than fifty years warrants recognition. We congratulate the association on its selection.

* * *

That old question of "who got lost in Washington?" still bobs up when a certain visit of telephone executives to Washington is mentioned. We hear

it here and we hear it there. While we would not for the world divulge that it was two executives from the northern part of Texas, we do feel like saying that it was an innocent venture on their part when they hesitatingly stepped into an electric train at the foot of the elevator in the Nation's capital and were whisked away to the Lord only knows where (?), but were relieved to find that they had landed safely in the building where United States senators are domiciled. But 'tis said that they felt greatly relieved when their feet touched "terry firmy" again.

J. I. KENNEDY GETS PROMOTION

At the July meeting of the board of directors of the Northwestern Telephone Co., Freeport, Ill., J. I. Kennedy, plant superintendent, was elected assistant general manager of the company.

Mr. Kennedy's promotion follows an 18-year service with the present organization and the Stephenson County Telephone Co., and is the culmination of thirty-five years' experience in the telephone business, which dates from 1899 when he started work as a collector with the Freeport Telephone Exchange Co.

Two years later advanced to the position of repairman, Mr. Kennedy went to Belvidere, Ill., entering the employ of the Central Union Telephone Co. in that capacity, and in 1902 accepted a position with Nebraska Telephone Co., with headquarteres at Omaha, where he remained for a period of 14 years.

During that period he was employed as plant manager in charge of plant appraisals and cable facilities, and in the plant construction and maintenance department, with Nebraska as territory, and later chief clerk to the district manager at Grand Island, Neb.

October, 1916, he returned to Freeport and began his duties as plant superintendent with the Stephenson Telephone Co., and when that organization was merged and became the Northwestern Telephone Co., he continued as head of that department.

Charles Bookman, who has been assistant plant superintendent, and has been associated with the local organization since 1895, has been promoted to assistant of outside plant.

Ralph M. Schofield, wire chief, who has been with the company since 1909, has been promoted to superintendent of central office and station equipment.

Features

- Direct interruption.
- Cam operated springs.
- Ball bearing parts.
- Long life platinum pointed contacts.
- Protected from dust by glass top cover.
- Requires small space.
- Easy to maintain.
- Economical to operate.

Operator can handle more calls with this

HOLTZER-CABOT MOTOR-DRIVEN INTERRUPTER

EXCHANGES all over the country are finding the Holtzer-Cabot motor-driven interrupter unit, the answer to better tone production and low cost automatic ringing. Operators can handle more calls and the load on the ringing machine is so distributed that it can handle a larger number of lines. Motor driven tone wheel produces low tone (160 interruptions per second) for dial tone or busy signal as well as high tone (480 IPS) for howler. Tones are accurate. No fussy adjustments as with vibrating reeds.

Automatic ringing is accomplished by cam operated interrupter spring contacts. Spring mechanism is far superior to slow moving sector wheels which require frequent repair due to sparking and corrosion. Parts easy to obtain. Springs quickly replaced without interfering with operation of other lines. Direct interruption. No extensive bank of slow acting relays. Simple, economical to operate . . . in short the most dependable method of producing good telephone signaling. Complete unit in itself. Our bulletin No. 507 tells more about this machine and other Holtzer-Cabot ringing and interrupter equipment. Write for it. Holtzer-Cabot engineers are also available to consult with you on any of your problems in telephone ringing equipment.

***The* HOLTZER-CABOT ELECTRIC COMPANY**
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When Quality counts, depend on Holtzer-Cabot

60,000 electrical items FOR EVERY TELEPHONE NEED

Pole Line Material . . . All kinds supplied economically and quickly.

Exchange Equipment of many types is available from Graybar.

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Lamps and Lighting . . . A complete line of fixtures and glassware.

Everything Electrical . . . Turn to Graybar for everything electrical.

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OFFICES IN ** PRINCIPAL CITIES. EXECUTIVE OFFICES, GRAYBAR BLDG., N.Y

HOW TO RUN BETTER SALES CONTESTS

(*Continued from page* 21)

and had his men sing it at meetings.

Action—Give a man a chance to do something. One company used a mythical "Ol' Man Depression" as the opponent of the men in a prize fight, and at the start of the contest a life size picture of the opponent was put on the wall and the men were allowed to throw knives at it. The Westinghouse Lamp Co., in connection with a prize fight contest, sent the men a booklet with a trick arrangement on the inside cover whereby he men could pull a string and a gloved fist would push out and smack the opponent on the jaw. People like to play. This little jigger created a lot of interest and attracted a lot of attention and gave the men a chance to jump right into the contest by pulling the string and landing the first blow with some real action.

Background, Timeliness, Personality—Often standard public literature can be used as a background for a contest. For instance, Jules Verne's book, "Around the World in Eighty Days," has been used as a theme for a "Round the World" contest. Peter B. Kyne's book, "The Go Getter," has been used as an introduction to the popular "Blue Vase" contest. In that book a lad named "Bill" Peck was told to buy a blue vase for his boss and though every possible obstacle was placed in his way he overcame all of these obstacles and found the vase. This story has frequently served as an inspiration to men whose companies want to give them hard jobs to do.

Timeliness is important not only from the standpoint of seasonal interest but in respect to events of the hour. A company in the South capitalized the successful floating of a Washington bond issue by announcing that it too was going to float an imaginary bond issue and give each routeman a quota of imaginary bonds that he had to sell to put over the "Prosperity Drive."

In a baseball contest one company showed a picture of its president throwing a baseball. This was captioned as a sign of the personal interest of this president and his spirit of interest in the contest.

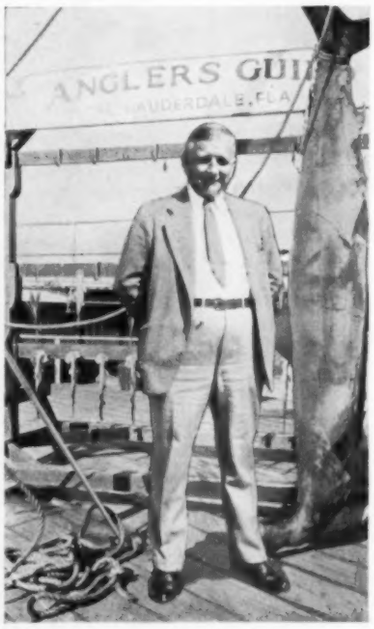
In conclusion I want to point out that there are only two kinds of showmanship. Good and bad. Poor showmanship represents wasted effort. The average routeman is a very good judge of what constitutes a good and a bad show. He sees so much of it around him in his daily life, in the movies, on the stage, in the air, in show windows, in advertising, that unconsciously he has become a very good critic and is quickly contemptuous of anything but a good show—and he probably even resents poor showmanship. Therefore, let me place particular emphasis on the need for putting showmanship into your contest from the very beginning to the very end and at every possible stage. No detail is too small to deserve consideration as a vehicle for showmanship and I might add that this extends not only to the contest but beyond it to the awarding of prizes. One company, running a baseball contest, not only used World Series seats as a prize, but in presenting the tickets and supplementary cash awards to its men, enclosed them in little paper baseballs

Another good example is the case of a company in Providence, R. I. An electric refrigerator was awarded as a first prize and the day that this was awarded it was on display, running, filled to capacity with ginger ale and the winner himself served the ginger ale in cap and apron. Little stunts like these assure you of a fine start on your next contest.

(To be continued in September)

J. H. WELKER SENDS IN "REAL FISH STORY"

J. H. Welker, Canton, Ohio, who sells telephone directory advertising as a vocation, and spends his spare moments in search for members of the finny tribe, sends TELEPHONE ENGINEER a picture which might be entitled "A Real Fish Story."



J. H. Welker

However, Mr. Welker disclaims the honor of having caught the nine-foot shark which appears by his side in the accompanying picture. He was present at the time the shark was caught, and sends the picture in verification of its size.

He also calls attention to the large number of small fish on the rack back of the large shark. These are baby sharks, and were taken from inside the mother shark when she was caught. It is the habit of the shark family to swallow the small fish when there is danger. The small fish are thus kept out of danger, and when everything is again serene, swim back out of the mother's gullet to sport about in the calm waters of the Florida coast.

NEAR REORGANIZATION OF MIDDLE WEST

Tentative approval of the reorganization of two subsidiaries of the Middle West Utilities company under section 77-B of the amended bankruptcy act was given yesterday by Federal Judge Walter C. Lindley of Chicago. The concerns are the United Public Service Co. and the United Public Utilities Co. A final hearing on the reorganization program was set for Nov. 1.

Samuel W. White was appointed permanent trustee for the companies under the program by Judge Lindley. At the same time several other orders were entered affecting the companies' affairs.

Permission to intervene in the proceedings was granted to the first lien bondholders' committee of the United Public Utilities; the United Public Service company committee headed by Ralph A. Bard and the joint reorganization committee consisting of members of the other two committees, the Central Republic Trust company and the City National bank. The banks are trustees for the bonds of the two concerns. Holders of the $14,000,000 of first lien obligations of United Public Utilities will receive securities in the new company in an amount equal to 50 per cent of their original holdings.

$20,000 IMPROVEMENTS IN COLORADO

Approximately $20,000 is being spent in Wray, Colo., by the Mountain States Telephone and Telegraph Co., chiefly in the stringing of additional telephone lines to certain rural areas out of Fort Collins, according to T. C. Turner, district manager.

South of the city, two new lines are being run to Span's Corner, and then to McClelland's corner and then east to Harmony. A crew of men is at present working on this job, when it is completed, an extra line will be run west to the Fort Collins waterworks and another as far as Thompson's Mishawaka Lodge. Additional lines may be strung later in the Log Cabin section.

LEICH HANDSET TELEPHONES

Code No. 70 Magneto
Code No. 62 Central Battery

Leich Handset Telephones Are

EFFICIENT

The carefully engineered design and the quality of materials used assures the purchaser of this fact. TEST THEM.

BEAUTIFUL

The smooth outline, graceful curves and absence of dust collecting grooves have resulted in a modern design which readily harmonizes with any setting. Your subscribers will approve LEICH HANDSETS.

RUGGED

Although light in weight the wise disposition of the material in LEICH HANDSET TELEPHONES gives them great strength and durability.

ECONOMICAL

LEICH HANDSET TELEPHONES are economical to use. Their ability to withstand the hard knocks of everyday service is a positive guarantee of low operating cost. Be the judge and order one today. Sent on 30-days trial.

"Use Leich Handsets to Rebuild Magneto Wall Telephones"

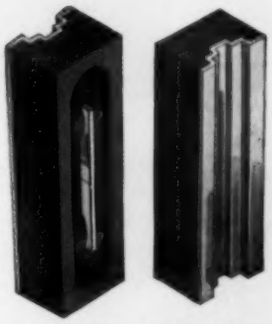
LEICH ELECTRIC CO. - Genoa, Ill.

Protection At a Minimum Of Maintenance

There is a Cook "O" type sub-station protector to fit the particular type of fuse you use in your outside plant.

COOK TRUE GAP DISCHARGERS THAT WILL NOT GROUND THE LINE ARE FURNISHED IN ALL COOK "O" PROTECTORS.

There is practically no maintenance to a Cook "O" sub-station protector.



ASK YOUR JOBBERS' SALESMAN

ACTUAL SIZES OF FUSES FURNISHED

Composition Fuse A12, Wood Fuse A44

Fiber Fuse A52

Wood Fuse A7, Composition Fuse A9

A WISE INVESTMENT

For your own and your subscribers' safety, particularly on rural and farm lines, install Cook "O" type protectors.

The cost is small, the installation easy. No need for additional type of fuses.

Cook True Gap Dischargers shunt to ground lightning and high potential surges without grounding the line. Cook "O" type is fireproof and weatherproof. It will protect property and reduce maintenance to a minimum.

COOK ELECTRIC CO., 2700 Southport Ave., CHICAGO

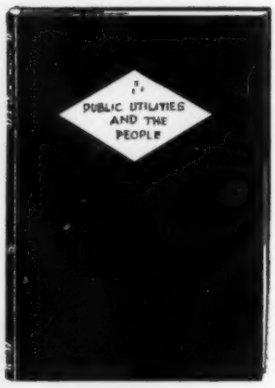
Equip your employees so they can defend your company against unjust attacks.

• • •

This book will give you and your employees many arguments in favor of public utilities—

"PUBLIC UTILITIES AND THE PEOPLE"

By H. M. Robinson



The more fundamentals of the business your employees know, the better able they will be to combat erroneous errors in the public mind.

• • •

This book can be secured in paper cover for only

90 Cents

• • •

Buy one for each of your employees and have them study it thoroughly.

Order through

Telephone Engineer

185 N. WABASH CHICAGO

TELLING THE FACTS TO THE PUBLIC

(*Continued from page* 18)

their subscribers as I am doing and I can't tell them why. But you telephone men know the reason. It is simply that you have not taken the time and trouble to do it. Yet it is the one complete and clear explanation of rates that carries conviction. You know the story as well as I and why you do not tell it to one and all is mystery to me.

The telephone industry should not be a charitable organization. You should not be playing the role of the blind man with the monkey and the tin cup.

This much can be said—that in this age of speed, the American public is demanding of you the fastest and most efficient service it is possible to furnish. It is your obligation to comply with that demand. In return, you have the right to expect a rate that is fair and reasonable—a rate that will pay decent wages to your employees—a rate that will maintain your properties and take care of other logical operating expenses—a rate that in addition thereto will pay a fair return to those who, through the investment of their dollars have made the furnishing of telephone service possible.

Most men are reasonable and amenable to reason. The public wants to be fair, but how can it be fair if you won't tell it the facts that furnish the answer to the question you hear on all sides: Why don't telephone rates come down?

You are furnishing service at cost and you can prove it. Why don't you try?

OPTIMISM KEYNOTE OF CONVENTION

(*Continued from page* 27)

were elected as follows:

President, F. B. MacKinnon, Chicago.

First vice-president, Frank A. Knapp, Bellevue, Ohio.

Second vice-president, Houck McHenry, Jefferson City, Mo.

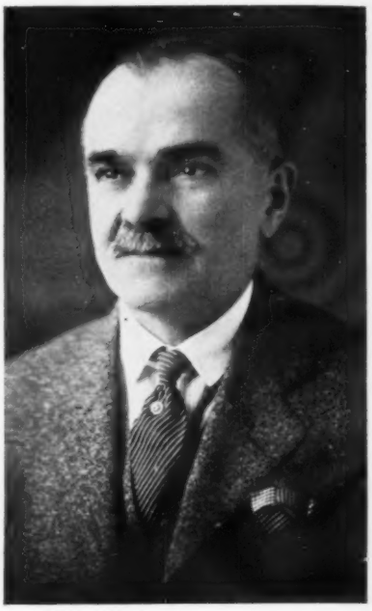
Third vice-president, W. G. Brorein, Tampa, Fla.

Secretary-Treasurer, C. C. Deering, Des Moines, Iowa.

The executive committee appointed by President MacKinnon and approved by the board is as follows:

F. B. MacKinnon, Chicago, chairman; Chas. C. Deering, Des Moines, Iowa, secretary; John H. Agee, vice-president, Lincoln Telephone & Telegraph, Lincoln, Neb.; E. C. Blomeyer, president, Telephone Bond & Share Co., Chicago; Geo. X. Cannon, president, Northwestern Telephone Co., Freeport, Ill.; Frank A. Knapp, president, Northern Ohio Telephone Co., Bellevue, Ohio; Geo. A. Scoville, vice-president, Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.; Geo. A. Yanochowski, president, Kellogg Switchboard & Supply Co., Chicago, Ill.; Louis D. Pitcher, president, Dixon Home Telephone Co., Dixon, Ill., as substitute for Mr. Cannon.

HIGGINS NAMED BY PIONEERS



P. Kerr Higgins

The closing day of the convention was given over to the 14th annual convention of the Independent Pioneer Telephone Association.

President John H. Wright called the meeting to order and reviewed the Association's activities during the past year. He complimented E. D. Glandon, Pittsfield, Ill., on his splendid work in collecting telephone relics for the Rosenwald Museum of Science and Industry in Jackson Park, Chicago.

President Wright called attention to Harry M. MacMeal's book, "The Story of Independent Telephony." Mr. Wright commended Mr. MacMeal for his work in preparing the only history of the Independent telephone industry.

Following recommendations of the nominating committee, P. Kerr Higgins, St. Louis, was elected president of the Pioneers for the coming year and J. K. Johnston was re-elected secretary. The following vice-presidents were re-elected:

Jacob W. Baker, Coeur d'Alene, Idaho; Frank L. Beam, Mount Vernon, Ohio; E. J. Boase, Frederick, Okla.; W. G. Brorein, Tampa, Fla.; W. H. Bryant, Mobile, Ala.; John W. Coffey, Indianapolis, Ind.; Rodney M. Coggin, Warsaw, Va.

DILLON Temperometer

Makes Helper Real Assistant to Cableman MAKES POSSIBLE

Even Temperature

FOR CABLE SPLICING

Furnish your cablemen with Dillon Temperometers and note the improved work performed, and much quicker.

GOOD JOINTS DEPEND UPON CORRECT SOLDER TEMPERATURE.

Accurate in gauging temperature, rigid in construction, convenient size.

DILLON MANUFACTURING CO.

Suite 1218 — 63 E. Lake St. Chicago, Ill.

Reliable

"RU" Cable Terminal

An Outstanding Contribution to the Telephone Industry

The "RU" is radical in design, yet simple in every respect and thoroughly fitted to the job.

Write for a sample

Reliable Electric Company

3145 Carroll Ave. Chicago, Ill.

MASTER PLIER

$1.50

While They Last

A limited supply of the MASTER 7-inch telephone lineman pliers. A BARGAIN YOU CAN'T AFFORD TO PASS UP. Formerly sold for $3.50.

With a Master 7 a lineman carries a smaller and more convenient tool—but one that will do as much as any other 8-inch because of the multi-power head—a stronger and more durable tool—better balanced and handier working—easier on the wrists—greater power—and, in ordinary use, unbreakable. An all-around, fine article, in which there is continued pride of ownership and consequently an inclination to treat it as a plier should be treated.

OUR SUPPLY WON'T LAST LONG. SO ORDER YOUR PAIR TODAY.

Dillon Manufacturing Co.

63 E. Lake St. Chicago, Ill.

TELERING

ECONOMY ◆ RELIABILITY

Size 12"x9"x5"

ONLY ONE CONTACT!

Directly converts Commercial Alternating Current to Telephone Ringing Current.

Trial Orders Invited

Price $44.00 F.O.B. Elyria

More Proof!

Olena, Ohio
June 8, 1934

Our TELERING was installed in November 1928 and since then has been in continuous operation without a penny having to be spent for contacts or parts. It is still running fine and all this time has given us the very best kind of service.

Some of our rural lines are very long and heavily loaded and the subscribers report that their rings come in clear and loud.

Our more than 5 years of trouble-free, economical and dependable Telering service is plenty of reason for concluding that it is the finest ringing machine made.

OLENA TELEPHONE CO.

First Cost is Practically the ONLY Cost.

POSITIVELY NO RADIO INTERFERENCE

Sold by Leading Telephone Distributors

TELKOR, Inc., Elyria, Ohio

We want more telephone specialties to produce and market.

WEATHERPROOFED WIRES

(*Continued from page* 28)

possible to study the effect of employing various types of constructions and of the large variety of possible materials. For applying braid saturants and outer coatings, wire is taken from a reel and passed through a tank containing the saturating compound, which is maintained at a suitable temperature. After the braid has been saturated with the asphalt compound, the wire may be again passed through the same machine but with the tank filled with stearine pitch. On emerging from the pitch the wire is passed through wiping dies to remove the excess, and then into a box containing powdered mica while the pitch is still warm and viscous. After leaving the mica box, the wire passes through water-cooled rolls which imbed the mica in the pitch and at the same time cool the wire to prevent adjacent turns from sticking together on the take-up reel.

Since the outer braid is employed to protect the rubber both from the effects of sunlight and of abrasion, two pieces of testing apparatus are employed to gauge its worth. One is an artificial weathering device. This is a heat insulated cabinet equipped with an electric heater with automatic control for maintaining any desired temperature up to 200° F. Water nozzles are provided to produce rain spray, and mercury arc lamps to provide ultra-violet radiation. Refrigeration facilities for subjecting the samples to reduced temperature cycles are arranged in a separate unit.

The equipment for testing the abrasion-resisting properties of wire finishes has two rotating aluminum-alloy wheels, the periphery of each of which is recessed to hold fifty samples of wire. Held against the samples on each wheel by a constant spring pressure is a furrowed hard-maple strip which serves as the abrader. The device is equipped with a counting mechanism for recording the number of times that each sample passes the abrader. The number of rubs required to wear through the weatherproofed braid to the rubber insulation is used as the index of the abrasion resistance of the sample. This test simulates the effect of the limbs rubbing against a wire, and permits rapid evaluation of the resistance of a wire to deterioration under service conditions.

In the continual search for improved weatherproofing materials, these facilities are of great value. Figure 1 is illustrative of the type of information obtained with the accelerated weathering device. The two samples of drop wire shown in this photograph have been exposed to artificial weathering for a period of two months. The sample at the top is the present standard drop wire, weatherproofed as described in an earlier paragraph; the bottom sample is the same type of wire, but weatherproofed in accordance with the practices in effect prior to adoption of the present standards. The two-month exposure to the artificial weathering cycle is estimated to be equivalent to three years of exposure to natural weathering. It will be noticed that the present standard wire (top) still has a substantial coating of weatherproof finishing compound, whereas the cotton braid of the other wire is almost completely exposed. Prior to the weathering test, both samples were coated with essentially the same thickness of weatherproofing materials.

(*Continued in Third Column*)

Data obtained from abrasion tests show that while the present standard wire requires from 56,000 to 66,000 rubs to wear through the braid, the former coatings would wear through in from 3,500 to 19,000. This improvement in abrasion resistance becomes particularly significant when it is considered that abrasion alone is responsible for something like half the total trouble in the drop wire plant.—*Bell Laboratories Record.*

Editors Note: This article is published in order that telephone men will have a basis on which to judge drop wire which they purchase and to aid them in keeping down trouble in their drop wire plants.

THANK YOU

You are to be congratulated on the appearance of *Telephone Engineer*. *Telephone Engineer* has always been an asset to a telephone man. Keep up the good work. You are doing a wonderful, good job to keep up with the times.

WALTER J. GALLON, Pres.
Langlade Telephone Co.
Antigo, Wis.

Please accept my hearty congratulations on the new dress, which adorns *Telephone Engineer*. This is a splendid piece of work and I know that the Trade will more than appreciate your efforts.

GEO. A. SCOVILLE, V. Pres.
Stromberg-Carlson Telo. Mfg. Co.

As a subscriber to *Telephone Engineer*, I am delighted at the continued improvement in this much needed magazine. It fills a great need for the technical part of our profession.

The front cover is excellent—the type and reading matter is far above the average.

What we need in the industry is not only news items, reports, etc., but also articles that will help managers, owners et. al. to improve their service to the public.

"For the life of me" I cannot see how anyone in the Industry can "carry on" without a magazine of this kind.

With every good wish for continued success.

P. KERR HIGGINS, Gen'l Mgr.
Fidelity Telephone Co.
St. Louis., Mo.

The new cover design adopted by *Telephone Engineer* in June is a great improvement over the former cover. It is more dignified, more attractive, and certainly gives a better impression to the reader than the old commercialized cover.

I have noticed also that the appearance of the inside of the book has been greatly improved typographically and it is my opinion that the editorial material appearing in *Telephone Engineer* has been steadily improving in quality for some time.

K. B. HOPKINS
Graybar Electric Co., Inc.
New York City.

ELI M. CARTER PASSES AWAY

Eli M. Carter, president of the Salisbury Home Telephone Co. of Salisbury, Mo., passed away August 1, at his home in Salisbury after a short illness. Mr. Carter was born in Golden, Colo., 72 years ago and has been connected with the utility business continually since 1896. In that year he and associates constructed at Hardin, Missouri, one of the first small electric light plants in the middle west. In 1902 he first entered the telephone field, purchasing and developing the exchange at Keytesville, Mo. In 1912 he acquired the system at Versailles, Mo., and in 1924 the property of the Salisbury Home Telephone Co. Mr. Carter was a real telephone pioneer and enjoyed a wide acquaintance of those connected with the industry.

TRUSTEES APPOINTED

The federal court at Wilmington, Del., has appointed Benjamin N. Brown and Owen Nolan permanent trustees for the Middle Western Telephone company. They had served previously as temporary trustees.

ULTRA MODERN

250 ROOMS AND APARTMENTS FOR A DAY –A WEEK–OR A YEAR

EXCELLENT TRANSPORTATION

●

BARBER SHOP–COMMISSARY – BEAUTY SALON AND COFFEE SHOP

●

Comfort with friendly surroundings and skilled service.

RATES
SINGLE ROOM FROM $2.50
DOUBLE ROOM FROM $3.00
SUITE (Suitable for Four)
From $6.00 to $10.00

ALL BRIGHT OUTSIDE ROOMS WITH COMFORTABLE BEDS . .

●

Bedroom suites with double in-a-dor beds in the living room, and one room apartments with either twin or double in-a-dor beds.

Electric refrigeration, filtered water, forced ventilation and concealed beds.

ONE HALF BLOCK SOUTH OF DIVERSEY PARKWAY

Lincoln Park Arms

2738 PINE GROVE AVE • CHICAGO, ILL.

CONVENIENT TO THE WORLD'S FAIR AND CONVENTION HEADQUARTERS

NRA AND GOVERNMENT CONTRACTS

Exemption for Independent telephone companies from signing N. R. A. Certificates of Compliance in connection with contracts for telephone service has been granted as follows:

APPLICATION OF EXECUTIVE ORDER 6646
Administrative Order No. X-71
EXCEPTION NO. 34
Upon the Recommendation of the Procurement Division, Treasury Department

By virtue of the delegation of authority by the President of the United Staes in Paragraph 5 of the Executive Order 6646, the following exceptions from the operation of the Order are hereby made:

"Contracts for public utility services comprising telephone, electricity, gas, water and steam, whenever in the judgment of the procurement or contracting officer it is impracticable or impossible to obtain the Certificates of Compliance required by such Order, and when the service is a necessary requisite to the activity and is performed as a part of the vendor's regular and usual public service; provided, however, that the agency awarding any contract under this exception shall certify to National Recovery Administration, via Procurement Division, Treasury Department:

1. The services covered;
2. Term of contract; and
3. The names of the parties thereto."

HUGH S. JOHNSON,
Administrator for Industrial Recovery.
August 3, 1934.

If telephone companies have continued furnishing service during July and August, they may now bill these departments or contractors for this service and receive payment. Send a copy of this exception with telephone statements. This Exception No. 34 means that telephone companies that did not sign the President's Reemployment Agreement in any form can contract with the postoffice or with contractors on government work to furnish telephone service wihout signing a certificate of compliance.

CUBA TO RUN TELEPHONE COMPANY

The American owned Cuban Telephone Co. has surrendered its 28 million dollar properties to the Cuban government, claiming it was unable to operate in view of the government's insistence that it reemploy 256 former strike leaders.

The government planned to attempt to operate the company's entire system, using one of its officials as administrator. It was understood the company retains title to the properties, but the government assumes full responsibility for maintenance of telephone service. The government also must guarantee international long distance service and must reimburse the company for any damage to property through inefficient operation, neglect, or sabotage.

The stand of employes who remained with the company and who objected strenuously to a government decree ordering the management to reemploy the former strike leaders was not immediately made plain.

THANK YOU

Congratulations on the improvements in *Telephone Engineer*. The new cover is especially attractive. I believe it to be a step in the right direction.

I feel sure that the new make-up together with the added improvements in content will make your publication increasingly attractive and useful to all classes of telephone men.

H. E. BILLINGTON,
Gen'l Sales Mgr.
Kellogg Switchboard & Supply Co.

We want to take this opportunity of congratulating you upon the splendid new apearance of the cover on *Telephone Engineer* and also the attractive appearance of the advertisements and other matter contained within the cover. Wishing you success for your progressive spirit.

F. O. CUPPY
Indiana Associated Telo. Corp.
LaFayette, Ind.

Congratulations on the new cover. Accept our compliments on the entire publication.

E. F. SCHULZ,
Sales Engineer.
National Carbon Co., Inc.

I am obeying an impulse which I have had several times to write you upon the improvement in the form and contents of *Telephone Engineer*.

I was so favorably impressed with the new cover design for June that I am taking this occasion to compliment you and your associates in your effort to produce a first-rate telephone publication.

Gulf States Telephone Company, as you know, is supplying its branch offices with this publication, and we feel that we are getting full value for the effort.

OSCAR BURTON, Gen'l Mgr.
Gulf States Telephone Co.
Tyler, Texas.

I want to take this opportunity to congratulate you upon the strikingly individualistic front cover of the June issue of *Telephone Engineer*.

FRED J. HEAVENS,
Sales Manager.
Telkor, Inc.

ASSOCIATION DISCUSSES PROBLEMS

The United States Independent Telephone Association, in a letter of August 2, calls the attention of its member companies to several important matters of interest to telephone companies. Following are the subjects discussed:

Capital Stock Tax. The Capital Stock Tax was reenacted by the last Congress. The rules are the same as last year. The time for filing returns has been extended to August 31st. This extension is covered by Treasury Decision 4447 issued July 16th by the Commissioner of Internal Revenue.

Internal Revenue Bureau Depreciation Rules. At our recent Convention the procedure of the Internal Revenue Bureau in connection with its plan to make a closer check of the Depreciation Charges made by corporations was discussed in full by our Washington attorney, A. L. Geiger. At that time the Bureau was using a complicated 14 column form for reporting the Depreciation practices of all companies. Since the Convention, officials of the Bureau have informed us that a simpler form is to be used for telephone companies. We will soon issue a bulletin on the rules and suggestions to our companies in answering inquiries of Field Agents. We suggest that all companies ask for time in which to fill out the forms when called upon by Field Agents and that all persons in discussing the question of service life remaining in the plant be very careful not to answer without careful study and discussion, as the off-hand statement often is contradicted by the later statement made after careful study — so no off-hand statement should be made.

Tax on Toll Message. There has been no change in the law. This tax is to be collected and reported as during last year.

Minor Corman, Hood River, Ore.; Jas. N. Cox, Cookesville, Tenn.; J. C. Crowley, Jr., St. Paul, Minn.; Francis Dagger, Toronto, Ont., Canada; Chas. C. Deering, Des Moines, Iowa; Nellie L. Edwards, LaCrosse, Wis.; Frank L. Eldridge, Chicago.

James R. Forbes, Waterford, Ont., Can.; Wm. F. Goodrich, LaCrosse, Wis.; John A. Gustafson, Abilene, Kans.; G. S. Herbert, Harrisburg, Pa.; P. C. Holdoegel, Rockwell City, Iowa; H. W. Hubenthal, Oklahoma City, Okla.; Ernest Irwin, Long Beach, Calif.

C. L. Jones, Athens, Ohio; Fred R. Kingsbury, Camden, Conn.; Geo. M. Kloidy, Lincoln, Neb.; Carrie S. Lester, Spokane, Wash.; F. B. MacKinnon, Chicago; Harold C. Marsh, St. Mary's, W. Va.; J. L. Mathews, Statesboro, Ga.; W. J. Melchers, Owosso, Mich.

C. H. Moore, Glasgow, Ky.; W. N. McAnge, Jr., Bristol, Tenn.; W. Roy McCanne, Rochester, N. Y.; C. P. McCluer, Tarboro, N. C.; A. T. Nicklawsky, Hillsboro, N. D.; C. L. Ovitt, Enosburg Falls, Vt.; Frank H. Russell, Portland, Ore.; W. S. Paca, Oil City, Pa.

W. O. Randall, Sumter, S. C.; Chas. A. Rolfe, Beverly Hills, Calif.; Wm. L. Smith, Neillsville, Wis.; Walter I. Sweet, River Edge, N. J.; and Otto Wettstein, Jr., Orlando, Fla.

John Y. Rust, San Angelo, Texas, was elected vice-president.

The guest speaker on the program was Douglas Malloch, Chicago, noted poet and humorist.

ATTENTION! PLEASE, WASHINGTON

The nation's telephone service has achieved a notable improvement in efficiency in the past five years, mistakes by operators having been reduced one-third. In 1933 more than ninety-nine per cent of the calls were handled without error, and local calls completed on the first attempt have increased from 80.9 per cent to 83.1 per cent. These two items alone mean improved service for about 600,000,000 calls each year.

On long distance and toll board calls the time taken to make the connection was the lowest and the percentage of calls completed was the highest on record, reports the Oklahoma Utilities Association. The average speed of making those connections was 1.5 minutes in 1933 as compared with 2.8 minutes in 1929.

Telephone wires first crossed the Mississippi River at Burlington, Iowa.

The mica used in the transmitter of telephones comes from mines in the hills of India.

No. 12 Protector

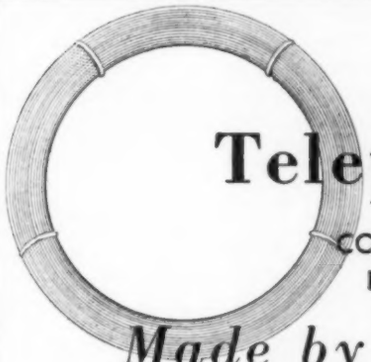
SANDS ELECTRIC CO.

EFFICIENT CENTRAL OFFICE PROTECTORS

FRAMES AND CONNECTING STRIPS

CABLE TERMINALS
LIGHTNING ARRESTERS
AND
SUB-STATION PROTECTORS

SANDS ELECTRIC CO.
NORTH CHICAGO, ILL.



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CONSTRUCTION WORK CONTINUES

The Gulf States Telephone Co., Tyler, Texas, is co-operating with the City of Groesbeck toward providing more efficient fire-fighting facilities. The telephone company has arranged a common ringing and common talking scheme that will enable the operator to signal and talk with each of the firemen simultaneously. The Gulf States Co. also recently completed the installation of new automatic or remote control equipment in their Lake Creek and Enloe exchanges.

The Del Rio and Winter Garden Telephone Co. is erecting a new copper toll circuit from Sabinal to Leaky, Texas. This new circuit will provide the Leaky exchange with improved toll facilities.

The Two States Telephone Co., Texarkana, Texas, has announced improvement programs for the Palestine and Jacksonville exchanges. Fifteen thousand dollars will be expended in Palestine rearranging and providing additional cable facilities. It is expected that a portion of the downtown cable will be placed under-ground. New toll facilities are the principle additions that will be provided in the Jacksonville plant.

The Southwestern Bell Telephone Co. has announced plans for city-wide improvement and expansion at Longview, Texas. The company expects to spend $265,000 in providing facilities to meet the rapidly increasing needs of Longview. A new fireproof building will house a modern switchboard. Additional cable extensions and general arrangement of the outside plant is included in the program.

The Livingston (Texas) Telephone Co. announces a new building program that will involve an expenditure of several thousand dollars and will completely modernize the service in that city. Work is already under way in the outside plant which will result in increased cable and plant facilities and the contract has been let for a new common battery switchboard. In addition to the late engineering principles that will be represented in this new switchboard, the very latest type telephone instruments will also be used.

New toll cable to cost $10,490 will be constructed in the city of Sterling, Ill., by the Illinois Bell Telephone Co., according to an announcement by Manager Acton.

Underground extension work is being done by the Illinois Valley Telephone Co. at Mt. Sterling, Ill.

Reconstruction of the toll line between Monmouth and Stronghurst, Ill., is in preparation by the Illinois Commercial Telephone Co. Iron wire will be replaced with copper and new poles will be used wherever necessary.

Under the direction of F. W. Miles, the Mountain States Telegraph and Telephone Co. are painting and decorating the interior of their offices at Lamar, Colo. When completed it will add a great deal to the appearance, also make it much lighter.

A new common battery telephone system is being installed in Sauk Centre, Minn., and will be placed in service the latter part of October, it was announced by Manager H. S. Forsyth, Northwestern Bell Telephone Co. The new telephone system, which will require an expenditure of about $11,000, is evidence of progress in Sauk Centre and indicative of the telephone company's faith in the stability of that community.

The work started last winter of relocating a section of the Sturgeon Bay-Hedge Hog Harbor long distance line of the Wisconsin Telephone Co. between Sister Bay and Gills Rock, Wis., is now practically completed. The project was necessary because of road improvement along State Trunk Highway 42 and County Trunk Highway "B". An expenditure in excess of $9,000 was required.

With the throwing of a master-switch during early July transferring all Avon (Ohio) telephone subscribers to the dial system, the Lorain Telephone Company completed its program of placing the entire system on automatic service. H. E. Hageman, treasurer of the company, also announced completion of a new telephone exchange at Avon Lake. The exchange is located in a new building constructed on Center Road near Walker Road. Approximately $30,000 was expended on modernizing the Avon system.

About 2,000 feet of new telephone cable is being laid underground on north 16th and 17th and west State streets in Clarenda, Ia., by the Farmers Mutual Telephone Co. The recent wind storm damaged the lines to such extent that they had to be replaced.

The Tri-State Telephone Co. is planning a number of improvements in Red Wing, Minn., most of them entailing the removal of overhead poles and wires and placing them underground.

The United Telephone Company is remodeling its building in LaCrosse, Kans. The walls and floor are being repaired by John H. Schwartz, repair man for the company.

The Moundridge (Kan.) Telephone company is laying new underground cable from the H. L. Durst residence to the edge of the city limits south of town. The new cable is 1300 feet long and contains 50 sets of wires.

Workmen broke dirt recently for the remodeling of the Citizens Telephone Co.'s main street construction in Paxton, Neb. The new construction will be contained in a lead cable laid under the edge of the sidewalk.

During the past few months the United Telephone Co. made a complete change in their telephone system at York Center and Byhalia, Ohio. Dial systems have been installed at both these places.

TRANSMISSION STANDARDS

(*Continued from page* 15)

by the installer will be helpful in avoiding unusually bad transmission conditions. Where transmission complaints seem to center on a few subscriber sets, it may be that high usage is causing faster than average battery deterioration and more frequent replacement of the batteries for these sets would materially help the transmission complaint showing.

By such procedures as are outlined in the last few paragraphs, it has been found possible to keep the various parts of the plant in a condition approaching that on which the design was based. Constant vigilance in regard to design and good maintenance routines insure a continuing improvement in the standard of service and still further increase in subscriber satisfaction.

Next Month — "General Switching Plan For Telephone Toll Service," by H. S. Osborne.

RESTORES PAY CUT

Bell Telephone Co. of Canada notified employes that effective August 1 the 5% wage cut had been discontinued. Four months ago discount from wages was reduced to 5% from 10%.

In order to spread available work as far as possible all employes will continue to work on a short-time basis.

ILLINOIS BELL HAS DEFICIT

Effects of the $20,700,000 refund ordered by the United States Supreme court are reflected in the Illinois Bell Telephone company's statement of earnings for the first six months of 1934. There was a sharp drop in both revenues and net income.

A deficit of $523,258 was shown. This is approximately the same as at the close of the first quarter, despite the omission of the May 31 dividend. The first quarter common dividend amounted to $3,000,000.

Net income before payment of dividends was $2,476,742, as compared with $4,405,207 for the first six months of 1933. The deficit at this time last year was $1,594,793, after payment of $6,000,000 in dividends.

Total revenues for the six month period are placed at $22,148,956, against the $36,462,436 figure of June 30 last year. In this sharp difference account is taken of the refund itself, which is $15,950,000, exclusive of interest.

The $4,750,000 interest to be paid in the refunding operation was reflected in the rise of interest charges to $6,177,542 over the figure of $1,572,568 for the first six months of 1933.

Total expenses of the company are placed at $13,494,672 as compared with the $30,484,661 for the first half of last year.

San Francisco was first connected by telephone with the state capital at Sacramento on March 1, 1884, just a half century ago.

The first telephone exchange in London was established in 1879.

ILLINOIS BELL FIGHTS LOWER RATE ORDER

Telephone rates should be higher rather than lower, according to the answer filed by the Illinois Bell Telephone company to the recent citation by the Illinois commerce commission to show cause why there should not be a reduction in its rates.

In its answer to the citation the telephone company said that its rates "should not be reduced but that they should be increased if made conformable to the statutes and constitution of the state of Illinois and the constitution of the United States."

The plea to vacate the citation said the company has not been able to earn its dividends for the last three and one-half years.

The company's answer set forth that while the average book cost of its plant and equipment in the state had increased from $251,747,979 in 1929 to $285,459,945 in 1933 its total revenues had diminished from $90,601,328 to $70,873,849. Between the same years the net telephone earnings fell from $16,553,353 to $12,368,229. In 1929 its return was 6.58 per cent and in 1933 it was 4.33 per cent.

It then set forth that "in 1929 taxes amounted to 9.93 per cent of its total telephone revenues, in 1930 to 10.47 per cent, in 1931 to 11.33 per cent, in 1932 to 12.33 per cent, and in 1933 to 13.7 per cent.

The Bell System uses about 2½ million pounds of solder a year in the splicing of cables.

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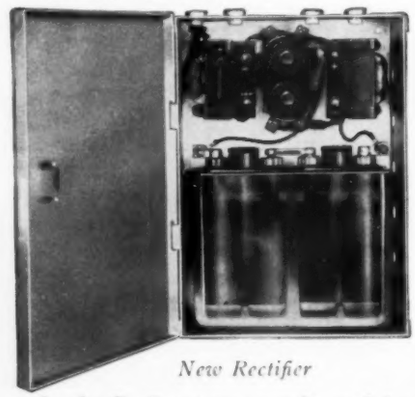
ELECTROX RECTIFIER

The Schauer Machine company of Cincinnati has developed a new Electrox rectifier-battery combination which they designate as their type GB. It is designed primarily to supply direct current at 4 volts to operators' transmitter sets and consists of a tapped transformer, variable register, copper-oxide rectifying element, choke and a two call, 20 ampere hour storage battery. This equipment is mounted in a steel case, size 9″ x 13″ x 5″.



New Rectifier

As the D. C. current supply used for telephone transmission or in operators' transmitter circuits must be without ripple or hum, the rectifier output, must therefore be perfectly filtered. This filtering is accomplished by means of a combination or choke and storage battery. The rectifier has sufficient output that 0.5 amperes may be drawn from the battery continuously or 1.0 amperes half of the time it is said.

DILLON TEMPEROMETER POPULAR

The Dillon Temperometer, the instrument to test the working temperature of wiping solder, is meeting ready acceptance, according to Dillon Manufacturing Co., 63 E. Lake St., Chicago. The company states that recently it has enjoyed a second order from the United States Signal Corps and one from the Philippine Long Distance Telephone Co.

S. B. DOUGLASS DIES

Samuel B. Douglass, 67, member of the Butler County (Ohio) school board and former deputy county treasurer, is dead, after a major operation, his third in six months. He was president of the Morning Sun (Ohio) Telephone company.

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"Some few weeks ago White's Indiana Manual Labor Institute installed an intra-institutional telephone system. The fifty-line switchboard and the telephone instruments were furnished by the Stromberg-Carlson company. The system is working very satisfactorily and has proved to be a very great convenience from the administrative standpoint. Our staff have found that matters which formerly required more or less time to determine may be disposed of immediately and satisfactorily by using the telephone."

KEARNEY BULLETIN

The James R. Kearney corporation, St. Louis calls attention to its new Bulletin No. 300 on "Kearney Telephone Line Accessories." The bulletin features anchors, anchor rods, augers, expanding and tamping bars, guy wire clips, strand bands and other products of the company.

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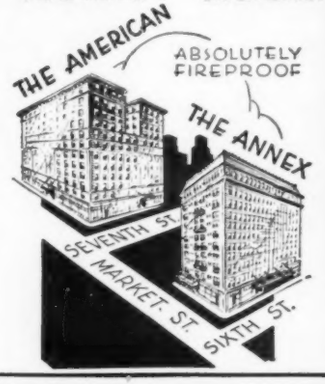

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